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ABSTRACT

This report describes results of research on the actual and potential effects of educational reform on the academic achievement of school language-minority students. It is found that recent education reform efforts complement societal sentiments favoring greater inclusion of students, but this sentiment can be translated into action only when schools organize for diversity. Educators must develop strategies and find resources to: (1) overcome poverty barriers, by making the schools critical resources for families and community; (2) include all students in educational reform efforts; (3) understand and respect cultural influences on learning; (4) help language minority students develop language skills; and (5) give all students equal access to a high quality curriculum, beginning with intensive English language instruction and bilingual or sheltered content-area instruction in all subjects. Contains a 135-item bibliography. (MSE)

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STUDENT LINGUISTIC DIVERSITY AND EDUCATION REFORM

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University of California, Santa Cruz

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PREFACE

Under a contract with the Office of Educational Research and Improvement of the U.S. Department of Education, a study of student diversity and education reform is being conducted by the National Center for Research on Cultural Diversity and Second Language Learning at the University of California, Santa Cruz. This project focuses on the importance of language and culture difference for students and the impact of linguistic and cultural diversity on schools.

The major goal of this research is to identify and analyze programs that are: (1) effective with language minority students in (2) language arts in grades 4-6 or mathematics and science in grades 6-8 in (3) a school that is engaged in a restructuring process.

The essential question addressed by this study is, "What are the actual and potential effects of education reform on the academic achievement of language minority students?"

The literature review is an expanded version of the introduction and first chapter in an edited volume of papers that were presented at the project conference in 1992 (*Language and Learning: Educating Linguistically Diverse Students*, B. McLeod, Ed., State University of New York Press, 1994).

Who are the subjects of this research? They are students whose families' primary language is not English, some of whom are immigrants, who are now contributing to the linguistic and cultural diversity of American classrooms. They are often referred to as *language minority* or *linguistic minority* students. Most language minority students are also members of *ethnic or racial minority* groups, which also include native English-speaking students such as most African Americans.

Language minority students may also be referred to as *bilingual* because their environment includes two languages, or because they are enrolled in bilingual education programs. But while some language minority students may be fully competent in two languages, others can speak but not read or not write in one of their languages, and still others may have limited skills in speaking one--or both--of their languages.

This project focuses specifically on the subset of language minority students for whom their ability in English is thought to be a significant factor in their academic achievement, that is, students with *limited English proficiency (LEP)*:

> Language minority students whose limited knowledge of English presents an immediate barrier to their opportunity to learn in mainstream classes are known as limited English proficient (LEP). They are entitled by federal civil rights laws to extra educational services to meet their special needs. (CCSSO, 1990, p. 9)

> Bilingual students who are limited in their mastery of English are considered limited English proficient (LEP). Although specific definitions of being LEP vary from state to state and within federal policy guidelines, most definitions include evidence that there is a language other than English in the student's social milieu (usually at home, but a broader setting may be given), that the language in question has had some impact on the student (ranging from the student's having some understanding of it to being monolingual in that language), that the student is not fluent in English, and that the student's academic performance suffers as a result of that limited fluency--that is, that the student has low academic achievement. (Secada, 1992, p. 627)

Although this research project focuses on LEP students, this review includes broader discussions of linguistic and cultural diversity, for several reasons:

- It is neither possible nor often desirable to make a sharp distinction between LEP students and the larger language minority population of which they are a part. LEP students represent one end of a continuum of English language proficiency, rather than a separate category of students. LEP students who become proficient in English still retain the same home linguistic, cultural, and socioeconomic environment, and still attend the same school, as before. English proficiency is only one of many factors that affect their academic achievement.

- Information about LEP students must often be extrapolated from data about other groups with which they overlap, such as immigrant students or ethnic minority students. (More than 40% of LEP students are immigrants, and nearly all are members of ethnic minority groups.) In particular, information about academic achievement must be inferred; LEP students are often not tested if achievement exams are available only in English.

- Although the specific mission of this research is to investigate how education reform can benefit LEP and other language minority students in the areas of language arts, science, and mathematics, the broader question is how schools can respond effectively to the linguistic and cultural diversity represented by their students.

Although LEP is the common term used to describe students with limited English skills, such a label, say critics, emphasizes students' deficits rather than their strengths. Terms such as language minority and linguistic minority, while referring to the relatively smaller number of children who come from family backgrounds in which a language other than English is spoken, may also seem to indicate subordinate social status. The authors of a report by the National Association of State Boards of Education (NASBE, 1991), on the impact of diversity on education, decided not to use the word "minority" to describe any group. Even though such terms may be numerically correct in particular contexts, they are often misleading and may connote inferior status.

It is difficult to find a satisfactory term, one without pejorative overtones, to describe the students who are the concern of this study. When juxtaposed with students from monolingual English language families, they may be called students from other language backgrounds or non-English language backgrounds. But even the terms "other" and "non" carry undesirable connotations. However, in the absence of other broadly accepted terms, and with the above caveats in mind, the designations LEP, language minority, and other/non-English language backgrounds are used in this review.

The designations "culturally and linguistically diverse" or "diverse" have often been used as code words and misapplied to a group of culturally homogeneous

students or even to an individual student. An individual cannot be considered culturally diverse; such terms should refer only to a group of students from several different linguistic/cultural backgrounds. A culturally homogeneous group of Mandarin-speaking immigrant students or Mexican American students whose families speak Spanish are culturally "different" from native English-speaking students, rather than "diverse." A classroom including students from these three heritages can properly be described as culturally and linguistically diverse.

This study focuses on two key transition points in the school career of all students. In the *late elementary* grades, students must progress from "learning to read" to "reading to learn" in order to benefit from instruction in content area courses at the secondary level and beyond. The academic and occupational futures of students are often determined by their success in mathematics and science courses in the *intermediate* or *middle school* grades.

The students who are the concern of this research face two major and simultaneous challenges--becoming academically competent in English, and mastering the same subject matter material as their native English-speaking counterparts. The first challenge is making the transition in a second language that other students make in their native language. For students who have been in traditional bilingual education programs since early elementary school, moving to the later grades means changing from some native language instruction to all-English classes. The second challenge becomes critical in middle school; if students cannot accumulate enough credits in an academic course of study--particularly in math and science--they will be unable to graduate from high school or enter higher education.

In order to provide a context for examining these challenges in the field study phase of the project, this document reviews the literature on these topics. Chapters 1 and 2 paint a demographic picture of LEP and language minority students. Chapter 3 outlines major recent trends in education reform. Chapter 4 discusses the potential promise of reform for LEP students and the obstacles to realizing that promise. Chapter 5 discusses the influence of culture on teaching and learning. Chapters 6 and 7 focus on the grade levels and subjects particular to this study, examining the challenges that elementary schools face in providing LEP students with a quality program of language development and that intermediate level schools face in giving LEP students full access to mathematics and science curricula.

EXECUTIVE SUMMARY

The linguistic and cultural diversity among students in American schools is greater now than at any time since the early decades of this century. One-third of students are from ethnic or racial minority groups; more than one-fifth come from homes in which English is not the primary language.

American schools, and the society they reflect, are at a crossroads in dealing with the challenge of student diversity. Educators in the early 20th century had a clear sense of their mission--to transform their immigrant and ethnic minority students into "100% Americans" by replacing their native languages with English and inculcating them with American values and mores. Some groups advocate that schools follow the same approach today--give students intensive English instruction, acculturate them to American educational practices, and then launch them out into the academic mainstream. The implicit assumption is that all students should be made to fit the traditional mold, and that language minority students' (lack of English) language is the only impediment to their academic success.

But such an approach runs counter to societal trends during the past half century toward a broader, more inclusive definition of "American" culture. Our hopeful image of American society is reflected in the glossy ads for children's clothes that come in our Sunday newspaper--children of all hues, some wearing glasses or hearing aids, others in wheelchairs, pictured harmoniously together. Our hopeful image of education is that all of these children, with their different cultural backgrounds, special needs, and individual learning styles, can succeed together in school.

Recent education reform efforts complement societal sentiments toward greater inclusion. The convictions that all children can learn complex material, that teachers can diversify their instruction to engage the different learning styles of their students, that students' knowledge should be respected and their initiative nurtured, that teachers, students, and parents can choose an educational path that is meaningful to them, all point to the belief that schools can truly educate children from a wide variety of backgrounds.

This sentiment of greater inclusiveness can be translated into action only if schools can become adept at **organizing for diversity**. A report on the challenge of diversity for colleges and universities (Smith, 1989) concludes that such institutions will fail to truly engage students and faculty of both genders and those with diverse ethnic heritages, economic backgrounds, and disabilities if they continue to perceive the concerns and needs of these groups as peripheral to the central educational enterprise. Programs for categories of students with special needs represent a necessary "institutional accommodation." "But specific programmatic and policy responses by themselves are not sufficient to make major strides. [They] run the risk of simply helping students `adjust,' `manage,' or `survive' in an alien environment" (p. 54).

More comprehensive organizational and systemic shifts are necessary. "By asking *how* an institution begins to educate and create a climate that is involving for all its members, the question is focused on fundamental aspects of the institution and its ability to embrace diversity, rather than on its ability to simply add programs or make modest changes" (Smith, 1989, p. 54).

In order to make school a truly diverse community of learning to which all students and teachers feel that they belong and in which they can all participate fully, educators must develop strategies and find resources to meet the following challenges:

- Overcoming the barriers of poverty
- Including all students in education reform efforts
- Understanding cultural influences on learning
- Helping students develop language skills
- Giving all students equal access to a high quality curriculum

Poverty

The overwhelming majority of language minority students are poor and are members of ethnic and racial minority groups. Often their neighborhoods are plagued with crime, drugs, and gangs, making it too dangerous for them even to play outdoors. Rarely do they have access to educationally enriching activities such as music lessons, museum classes, or summer computer camps. Their families experience the stress of day-to-day survival without enough food, income from steady employment, adequate housing, health insurance, or access to counseling in times of crisis. Poor students are often so overwhelmed by daily struggles of life that they cannot concentrate properly on school.

Language minority students also swim against the tide of discrimination. The prejudices of society and some school personnel against poor people, immigrants, ethnic minorities, and those who do not speak English, may limit their opportunities and discourage them from working hard at academic pursuits.

Schools can make a tremendous difference in the lives of poor students. By creating a positive, personal climate with high academic and ethical expectations, schools can become a haven where students feel respected and capable of success. Principals, teachers, nurses, counselors, and other staff can enhance their students' academic and personal lives by going beyond their traditional job descriptions. By working with outside agencies or providing social services themselves, schools can become a critical resource for families and the community.

Education Reform

Changes in educational philosophy and practice can also benefit language minority students. The recommendations for transforming education for poor students, ethnic minority students, language minority students, and white middle class students have been strikingly similar:

- Viewing all students as capable of serious study and deep thought about complex subjects

- Viewing each student as bringing to school a unique combination of knowledge, beliefs, learning styles, and motivational styles

- Challenging students with high expectations, diverse presentations of material, and diverse assessments of learning

- Building on student interests and motivations in designing curriculum and instruction

- Guiding students in learning from others and in becoming self-motivated learners rather than relying on teacher and text as sole sources of knowledge

- Individualizing and personalizing the educational experience and teacher-student relationship

Including language minority students and disadvantaged students in reform efforts means providing them with an equal opportunity to meet challenging goals (*performance standards*) by ensuring that the schools they attend have sufficient human and material resources (*resource standards*) and that the schools use these resources to implement a high quality program of study (*practice standards*) (O'Day & Smith, 1993).

The Influence of Culture

Because the vast majority of teachers and administrators come from middle class European American monolingual English backgrounds, applying the general tenets of reform to educational practice for specific groups of students often requires educators to cross boundaries of culture and language as well as race and socioeconomic status.

In addition to differences among individual students, teachers encounter differences among cultures that are relevant to education, for example, the ways in

which parents teach children at home, the ways in which parents expect children to behave, and the ways in which children and adults converse and interact. When teachers do not share their students' cultural background, the teaching-learning process may be impeded by misunderstanding and frustration. The challenge of cultural differences is compounded, for teacher and students, in classes composed of students from several cultural backgrounds. Teachers can work to provide students from different cultural backgrounds with an equal chance to succeed by:

- Becoming knowledgeable about different cultures and the principles of cross-cultural communication
- Supplying information about American culture and history, and about the hidden, implicit "culture" of American classrooms, that students may lack
- Including information about other cultures in the curriculum; bringing students' own cultural knowledge into the classroom
- Becoming sensitive to cultural patterns of interpersonal communication and culturally influenced learning styles
- Organizing students in a variety of cooperative and heterogeneous arrangements in addition to having them work independently

Respecting, including, and validating students' cultural heritages in the classroom and the school sends a message of equality that encourages students to feel proud of themselves and capable of meeting rigorous academic standards. Teachers who create a climate of support for cultural expression and learning about other cultures help prepare students for adult life in a multicultural society. Teachers who take advantage of the opportunity to learn about other languages and cultures along with their LEP and other language minority students provide a model of life-long intellectual enrichment for their students to emulate. Teachers, as well as students, can prepare themselves with a greater understanding of international issues for participation in a global economy.

Developing Language Skills

Providing language minority students with an equal opportunity to succeed means ensuring that they can speak, read, and write English proficiently enough to study other subjects in English and pursue educational and occupational paths open to native English speakers. Bilingual education programs can help students learn English while simultaneously developing cognitive skills in their native language and learning subject matter material. English as a Second Language (ESL) programs focus on intensive English instruction. Sheltered English programs combine ESL with subject matter instruction.

A major challenge is providing any of these special language development programs to students with limited English proficiency. Most LEP students spend most of their time in school with regular classroom teachers. These teachers can best help students by becoming knowledgeable about the processes of second language acquisition, and by recognizing that:

- Learning a second language is a slow, difficult, and complex process.
- Children may need different kinds of language instruction at different ages.
- Language is not the only, and perhaps not even the primary, barrier to achievement.
- Developing children's native language skills does not impede, and does enhance, their learning a second language.
- Learning a second language entails emotional issues of cultural identity and social status.
- Students learn a second language best in active communication about meaningful topics with more proficient speakers of the language.

Educators can also take the lead in questioning the "double standard about bilingualism" in American society that encourages native English speakers to study foreign languages but discourages native speakers of other languages from maintaining them. If proficiency in two or more languages were seriously promoted for all American students (as many educators have proposed), the interests of language minority and language majority students would coincide and reinforce each other.

Curricular Access

Programs for students with limited English proficiency have sometimes been based on the assumption that English is a basic skill that students need to master before being given access to other subjects. This view is evident in many secondary schools, where LEP students are offered only a thin academic diet until they can demonstrate sufficient command of English. Secondary school-age students who are not proficient in English very quickly risk losing their chance to graduate from high school and seek further education.

If secondary schools are to provide LEP and other language minority students with an equal opportunity to learn subjects such as college preparatory mathematics and science, they will need to consider all of the following:

- Offering advanced level ESL courses
- Offering sheltered English math and science courses or math and science courses taught in students' native languages, with native language texts
- Assessing more accurately students' prior academic knowledge and ability to succeed in regular classes despite gaps in English skills
- Dismantling the tracking system that consigns many LEP students to lower level math and science material

- Integrating LEP students and their linguistic and cultural backgrounds into reformed mathematics and science curricula

- Reorganizing the secondary school departmental structure to give teachers more flexibility in meeting the academic needs of LEP students

Elementary and secondary schools would serve LEP and other language minority students best if they could offer these students intensive English language development instruction along with bilingual or sheltered English instruction in all other academic subjects.

The 21st Century Challenge

As we enter the 21st century, teachers and administrators face the formidable task of reforming the teaching-learning process to guide students into becoming self-motivated, thoughtful learners who can apply their knowledge to real world pursuits. A central tenet of this new vision of education is that *all* students are capable of benefiting from the type of education formerly available to only the elite. The major challenge for educators will be to provide this educational opportunity equally to all students, whatever their socioeconomic status, race or ethnicity, linguistic background, learning style, or disability.

The approach in previous decades of giving some groups of students remedial assistance has not been successful. Rather than preparing students with particular needs to enter the mainstream at some later time, the challenge will be to include all students *in* the mainstream while simultaneously addressing their needs. As Bartolome (1994) states, "transitioning the student from object to subject position produces more far-reaching effects than transitioning the student from native language to English" (p. 218). The genuine inclusion of students from all linguistic and cultural backgrounds in education reform efforts would not only foster their academic success, it would also enrich schools with the diversity of their talents.

CHAPTER 1

THE DIMENSIONS OF LINGUISTIC DIVERSITY

American schools face an unprecedented challenge in the 21st century--educating the world's most linguistically diverse student body. Although most American schoolchildren speak English as a native language, increasing numbers of students come from other language backgrounds. Children from immigrant families or from American ethnic groups that communicate primarily in another language may not have the opportunity to become fluent in English at home.

Individuals and groups vary not only in language, but also in cultural traditions and attitudes, educational preparation, and economic status. Educators can no longer assume a common language, culture, life situation, or understanding among students, or between student and teacher. This chapter presents demographic information about the students who are the subject of this research, a portrait that will serve as the context for subsequent chapters that focus on their education.

Our Destiny of Diversity

According to the 1990 U.S. Census (*Numbers and Needs*, 1993, March; 1994, July), more than one-fifth of school-age children and youth come from language minority families--homes in which languages other than English are spoken. For many of these students, English is not their first language, and they enter school with limited English proficiency.

The proportion of language minority students who have limited English proficiency is estimated by various sources as one-fourth (GAO, 1994), one-third (August & Hakuta, 1993), or as large as one-half to three-fourths (*Numbers and Needs*, 1993, March), constituting between one out of twenty and one out of seven of the nation's 5-17 year olds.

Where have these students come from? One source estimates that three-quarters of students under age 15 with limited English proficiency were born in the United States (CCSSO, 1990). According to a recent report (GAO, 1994), more than half come from families who have lived in the U.S. for at least a decade; about 43% of students with limited English proficiency are immigrants themselves or from families of recent immigrants.

There have long been segments of the American population that spoke languages other than English at home, most notably Hispanics and Native American groups. But recent immigration has contributed greatly to linguistic diversity among schoolchildren. Estimates of the number of immigrant students--most with a native language other than English--range from 2 million (McDonnell & Hill, 1993) to 2.7 million (McCarty First & Willshire Carrera, 1988) out of a total school population of 45 million.

More than 7 million immigrants entered the U.S. in the 1980s, nearly as many as during the first decade of this century (*Numbers and Needs*, 1993, May). This recent immigration has brought to the U.S. many more Spanish speakers, as well as speakers of more than 100 other languages. The mix of languages, cultures, and birthplaces of today's schoolchildren is more diverse than at any time in the history of the United States.

In the early decades of this century, as many as one in seven people in the U.S. were foreign-born. The current rate of one in thirteen is high only in comparison to the low immigration decades of the 1950s and 1960s, when one in twenty American residents were foreign-born (ERS, 1990a). By 2020, when today's kindergartners are in the work force, the foreign-born population in the U.S. is again projected to reach one in seven people (*Numbers and Needs*, 1993, May).

Not only has the flow of immigrants increased dramatically, but the pattern of immigration has shifted. Before the immigration laws changed in 1965 to allocate an equal quota to each country in the world, three-quarters of immigrants to the U.S. came from Europe. They spoke languages and brought cultures with which Americans, and U.S. school systems, had some familiarity. Now, nearly three-quarters of legal immigrants come from Asia and Latin America. Half of Asian and Pacific Islander Americans are recent immigrants (Nieto, 1992). In addition to large

numbers of Spanish speakers, schools encounter students whose native language is Korean, Tagalog, Hindi, Farsi, Hmong, or Mandarin.

Today, three-quarters of Americans claim European descent; by 2050 only half will (Wolff, Rutten, & Bayers, 1992). But American society is not alone in facing the challenge of ethnic and linguistic diversity. Australia, Canada, France, and Belgium all have higher percentages of foreign-born residents than the U.S. (Wolff et al., 1992).

Linguistic diversity among students in U.S. schools is predicted to persist and increase, according to the U.S. Census (*Numbers and Needs*, 1991, December; ERS, 1990a; Pallas, Nutriello, & McDill, 1989) and a report on Hispanics and education (Chavez, 1991).

- The Hispanic population in the United States grew by 53 percent in the 1980s, and the number of Asian Americans doubled.

- Between 1990 and 2010, the school-age population of Whites will decline by 9 percent; Blacks will increase by 5 percent, Hispanics by 42 percent, and other ethnic groups by 39 percent.

- In 1982, three out of four children were non-Hispanic White; in 2020 only one out of two will be. In 1982, one out of ten children were Hispanic; in 2020 one in four will be.

- Spanish is the native language of 65 percent to 70 percent of all LEP students, while 10 percent to 15 percent speak one of several Asian languages.

The implication for the educational system is one of increasing linguistic diversity in U.S. schools. Already, during the 1980s, the number of LEP students grew two-and-one-half times faster than regular school enrollment.

Uneven Distribution

While the proportion of language minority students may be relatively small, the numbers can be large, especially since students are not distributed evenly across the country. Although clusters of students from non-English language backgrounds attend schools across the United States (National Forum, 1990), the population is heavily concentrated in a few states.

Nearly four-fifths of recent immigrant students live in just five states; almost half live in California. "Nearly 75 percent of all Hispanic immigrant children, and children born to recent Hispanic immigrants, reside in five major metropolitan areas: Los Angeles, Miami-Dade, Houston, New York, and Chicago" (McDonnell & Hill, 1993, p. 108).

Nine states have at least 25,000 LEP students. New York and Texas each have more than half a million, and California has close to a million (*Numbers and Needs*, 1992, May). In California ethnic minority students have become the majority; more than half of public school students are Hispanic or non-White. One in four K-3 students in California cannot speak English fluently (Guido, 1992).

Large urban school districts such as New York, Los Angeles, Chicago, Miami, Houston, and San Francisco enroll the majority of recent immigrant students (McDonnell & Hill, 1993), but the rural areas of the southwestern United States are also home to many students from American Indian groups and Spanish-language backgrounds whose families have lived in this country for generations.

Diversity within Diversity

Large states and urban school districts not only must accommodate large numbers of students from non-English language backgrounds, but also must cope with the linguistic diversity of their student bodies, which can represent dozens of native languages in a single school, or more than 100 in a district.

Schools also face another form of diversity; students from non-English language backgrounds vary widely in their age, prior academic preparation, and English fluency. Students may enter American schools for the first time at any grade level; they may move frequently, have many absences, or spend periods not in school. Some immigrant students have had excellent schooling in their home country before coming to the U.S., others have had their schooling interrupted by social unrest or war, and still others have never attended school (BW Associates, 1992).

Four-fifths of U.S. residents who speak other languages at home also speak English well. But the English-speaking ability of the remaining one-fifth varies according to native language; home speakers of some Asian languages, as well as Russian, Armenian and Spanish, report less fluency in English than speakers of European and Middle Eastern languages (*Numbers and Needs*, 1993, September). This great variety in the circumstances of students from language minority families makes it impossible for a single program or educational approach to meet all needs.

Diversity and Academic Achievement

For many students from non-English language backgrounds, American education is not a successful experience. No matter what criterion is used (grades, test scores, dropout rates, college acceptance rates), linguistic minority students do not perform as well in school as their English language background contemporaries (CCSSO, 1990).

- Language minority students are less likely to take academic courses and more likely to be enrolled in vocational courses (CCSSO, 1990).

- Hispanic high school students score three years behind their non-Hispanic White counterparts in writing and four years behind in science and mathematics (De La Rosa & Maw, 1990).

Although high school dropout rates among LEP students are not tabulated separately, it is clear that, in some ethnic minority groups, a large percentage of the students leave school without a high school diploma (McCarty First & Willshire Carrera, 1988). For many of these students, limited proficiency in English is undoubtedly a significant contributing factor. Compared to a dropout rate for non-Hispanic Whites estimated by the National Center for Education Statistics (cited in CCSSO, 1990) at nearly 13% (in 1988), rates for other groups are considerably higher, according to figures cited by CCSSO (1990), the National Center for Education Statistics Issue Brief (1992), and the National Association of State Boards of Education (NASBE), (1991):

African Americans	15-24%
Mexican Americans	40%
Puerto Ricans	75%
Hispanic immigrants	43%
Native Americans	48%
Asian immigrants	60%
Filipinos (birthplace unspecified)	41%
Samoans (birthplace unspecified)	60%
Foreign-born students	70%

It may be thought that children from non-English-speaking families in past generations were easily assimilated by American schools and learned English without special programs. But in fact language minority students have always lagged behind native-born English speakers in school achievement, and have always had high dropout rates (Wong Fillmore & Valadez, 1986). What has changed is the economic structure of the United States; the manufacturing jobs that supported workers whose academic English proficiency was insufficient to earn them a high school diploma no longer exist. New economic realities mean that the academic failure of large groups of students is now a societal problem, rather than merely a personal concern.

CHAPTER 2

POVERTY, SUBSTANDARD SCHOOLING, AND DISCRIMINATION

One of the most formidable barriers to the academic success of LEP and other language minority students is that most of them share social characteristics with other at-risk student groups. Students from non-English language backgrounds are subject to the same ills of poverty, substandard schools, and low expectations for success that plague students from many ethnic minority groups. LEP students, especially recent immigrants, not only share social conditions with African American and Hispanic students, but often attend the same inner city schools. It is impossible to reform education to benefit language minority students without addressing their socioeconomic, as well as linguistic, situation.

There is a significant overlap between economic status and language difference; in 1984, more than 90% of students from non-English speaking homes met official poverty guidelines (Garcia, in press). Overall poverty rates increased for children during the past decade, with a heavier impact falling on children from minority groups. While one in three young children in the U.S. are poor, three in five minority children are poor. Half of young African American children are poor, as are 40% of Hispanic children, compared to only 14% of non-Hispanic White children (National Center for Children in Poverty, 1992). Children from poor families are often unable to take full advantage of what the schools offer, and schools in poor neighborhoods offer less educational opportunity to begin with. Students who experience poverty, substandard schooling, and discrimination frequently do not remain motivated to work hard at academic pursuits. These challenges will need to be seriously addressed if the academic achievement of language minority and other minority groups is to improve.

Poverty of Students

Poor students are likely to have fewer family and community resources that contribute to educational success. Children who are poor may be malnourished, may not have adequate health care, may live in substandard housing, may live in unsafe environments, are likely to have parents who have not progressed far in

school, and are less likely to have access to educational opportunities in the community such as preschools, libraries, concerts, museums, and after-school programs. A recent study of education for immigrant children (McDonnell & Hill, 1993) cited basic health care as one of the most important unmet needs identified by school officials. Many immigrant students, like poor urban minority children, have also had to cope with the trauma of witnessing violence close at hand. The provision of coordinated educational, health, and social services would enhance the ability of poor children to succeed in school, conclude McDonnell & Hill.

Many parents of students from non-English language backgrounds lack the skills needed to obtain good jobs. They would benefit directly, and their children indirectly, from adult education programs tailored to their academic preparation. Principals and teachers of immigrant children surveyed by McDonnell & Hill (1993) cited the need for English-language instruction, high school equivalency classes, vocational training, and workshops on effective parenting for the parents of their students. Such opportunities, the respondents believed, would translate into more successful schooling for the children. McDonnell & Hill (1993) note that the demand for adult education classes in California during the past decade has far outstripped the supply.

While it is difficult to establish a direct causal link between socioeconomic status and academic achievement, it is clear that changes in social and economic conditions often mirror changes in achievement. For example, between 1960 and the early 1980s, the poverty rate for children declined and other social indicators such as health improved. The test scores of poor and minority students also improved, narrowing the gap between them and White, middle-class students. But social and economic conditions for children living in the inner cities began to decline again in the late 1970s and early 1980s, and the achievement gap has widened between Black and White students, and between urban advantaged and urban disadvantaged students (O'Day & Smith, 1993).

Poverty of Schools

Schools serving large LEP student populations may require more money than the average school for English language teaching programs; programs, teachers,

aides, and materials that use the students' native languages; and social and counseling services. Yet such schools, if located in poor neighborhoods, often receive less than schools with fewer needs.

Targeted funds allocated to poor students may not translate into benefits for LEP students. For example, money from federal programs targeted for children disadvantaged by society (such as Chapter 1) may be denied to LEP students in bilingual education or ESL programs (funded in part by Title VII) in the mistaken belief that they cannot receive services from multiple programs (CCSSO, 1990).

Students from non-English language backgrounds have a high probability of attending a substandard school because they are likely to live in poor neighborhoods. Studies in California and Texas found that as the proportion of Hispanic students increased, per-pupil expenditures (Valencia, cited in Chavez, 1991) decreased. Schools serving poor students often emphasize basic computation skills and neglect mathematical concepts and applications (Porter et al., 1988), have less experienced teachers and inadequate resources (Darling-Hammond & Green, 1988), and tend to have low expectations of their students' ability to learn (Good & Biddle, 1988).

A study of California Hispanic and other language minority students found that they are "highly concentrated in segregated schools where the average achievement level is seriously lower than in schools attended by Anglo students" (Espinosa & Ochoa, 1986). By the third grade, 80% of Hispanic, 56% of American Indian, and 53% of Asian American students attend schools that are at or below average in reading and math scores; the same pattern persists through high school (Espinosa & Ochoa, 1986). As Espinosa & Ochoa conclude (1986, p. 95),

> A student of above-average potential in a Hispanic neighborhood would be very likely to attend a school with less challenging classmates and lower than average expectations than a similar Anglo student....This may well point to one of the key mechanisms by which educational inequality is perpetuated and by which talented students are denied the opportunity for equal preparation for college.

Student Motivation

While a great deal of attention has been paid to student characteristics derived from their socioeconomic or cultural background that influence academic achievement, the most important student contribution to achievement is probably effort. Students are more likely to succeed if they have a positive attitude toward school and the motivation to study. Caplan, Choy, & Whitmore (1991) credit the educational success of a group of Vietnamese refugee children to their positive attitude toward school and their hard work. Despite attending poor, inner city schools, despite coming from poor and uneducated families, this group of children performed as well as, or better than, the national average on standardized tests.

The attitudes that students develop toward school may be shaped in large part by their perception of how much the school and society values them. One of the greatest disadvantages of attending a poor school in a poor neighborhood is a negative school climate. All students are influenced by the appearance of the school and by how the people at the school treat each other. If teachers demonstrate by attitude or word that they have low expectations and low opinions of students from certain groups, if students from minority groups are considered troublemakers, if students from different ethnic groups are frequently in conflict with each other, if school is a dangerous and unpleasant place, students can feel afraid and demeaned, decreasing their motivation and interest in school.

More than half of students in inner city schools become "turned off" and drop out of school (McLaren, 1988), many because of racial discrimination, negative attitudes by teachers, and punitive school policies (Felice, 1981). Some studies have found that dropouts leave school not because they cannot do the work but because they are pushed out by an intolerable atmosphere (Raywid, 1987).

Students' motivation can be dampened not only by the low expectations of teachers, but also by their view of their opportunities in society. What they observe in their neighborhoods may reflect official statistics, that poverty rates for adults with equivalent education are higher for Hispanics and Blacks than for Whites. While 19% of Whites with a high school diploma are poor, 33% of Hispanics and 52% of Blacks who graduated from high school live in poverty. Only 5% of Whites

with more than a high school education live in poverty, compared to 20% of Hispanics and 25% of Blacks (National Center for Children in Poverty, 1992).

Discrimination

In a review of the participation of women and minorities in science and math, Oakes (1990) notes that although many of the achievement and participation differences between minorities and Whites can be attributed to differential socioeconomic status, real and perceived discrimination may play a part in explaining the remaining significant differences.

Ninety percent of language minority students are poor (Garcia, in press), and 98 percent are persons of color (Olsen et al., 1994). Societal prejudice against the poor, against minority group members, and against immigrants can adversely affect students from non-English language backgrounds. Society's disparagement of cultural or linguistic differences can constitute a more significant obstacle than the differences themselves. The academic motivation of language minority students can be negatively affected in the following ways:

- Native languages other than English are often devalued by schools (Nieto, 1992); this "linguicism" (Skutnabb-Kangas, 1988), or discrimination based on language, can be felt as deeply as racism.

- Cultural differences are often viewed as an obstacle to learning. Students feel forced to abandon their language and culture in order to be successful in American society (Ogbu, 1992).

- Teachers may have low expectations of culturally different students, which students "live down to" (Rosenthal & Jacobson, 1968) in a self-fulfilling prophecy (Merton, 1948).

- A curriculum that excludes non-European American people and cultures or includes only negative stereotypes of them can lead students to feel devalued and rejected, resulting in their refusing to learn (Ogbu, 1986).

Ogbu's (1986) distinction between voluntary and involuntary immigrants to the U.S. provides an explanation for the differential success rates of minority groups by highlighting the reciprocal influence of dominant culture opinion and the self-image of minority group members. Ogbu argues that involuntary immigrants--groups that have been conquered or colonized, such as African Americans, Native Americans, or Hispanics--are more stigmatized than newer groups of voluntary immigrants, who sometimes outperform even U.S.-born Americans of European ancestry.

Dominated groups can experience academic disadvantage *because of* their subordinate position in society (Nieto, 1992). Involuntary minority groups, such as Koreans in Japan, Finns in Sweden, Irish Catholics in Northern Ireland, and Maoris in New Zealand, do poorly in their own country but often succeed academically if they immigrate to the U.S. or Australia, where they are not burdened by the cultural baggage of negative expectations (Nieto, 1992). Similarly, it has been argued that Mexicans, Africans, and Puerto Ricans newly arrived in the U.S. often do better in school and have higher self-esteem than their counterparts born in the U.S. (Nieto, 1992).

As societal institutions, schools reflect societal values. The prejudices of the larger society are conveyed to students in subtle ways, even by school personnel who sincerely believe themselves to be unbiased. Discrimination on the basis of race or gender, uncovered by previous research, may also negatively affect students from language minority backgrounds:

- A study that analyzed a videotaped class found that the White teacher made eye contact more frequently with her White students. Her Black students "had to strain three times as hard to catch the teacher's eye, looking for approval, affection, and encouragement" (Nieto, 1992, p. 21).

- Several studies have documented that teachers pay more attention to White and male students than to students of color and female students (Nieto, 1992, p. 25).

- Even students of superior ability may be neglected by teachers if they are not White males; according to Shakeshaft (1986), teachers direct the least attention to high-achieving female students.

- One study (cited in Nieto, 1992) found that African American and Mexican American students performed equally to European Americans in an objective measure of language development, but the same children of color were rated as inferior by teachers using subjective criteria.

- Teachers have higher expectations for Whites and middle-class children than for African Americans, Hispanics, and poor children, and these expectation differences coincide with school tracking practices (Oakes, 1990).

- The terms used to refer to students and the programs designed for them, such as "cultural deprivation" and "compensatory," send a strong message of inferiority.

- Some school personnel are overtly biased; a New York City teacher testified that "in general, the reception given to immigrant children was so negative and hostile that many of them were so turned off to their new society that they were never able to learn how to speak English. Bilingual students were called animals, garbage, jerks, idiots by many teachers...and this unprofessional and inhumane treatment of children was condoned by the administration" (McCarty First & Willshire Carrera, 1988, p. 60).

- In many multi-ethnic schools, hostility between groups is the norm, and immigrant and other language minority students are at the very bottom of the ranking order, subject to verbal and physical abuse from fellow students (McCarty First & Willshire Carrera, 1988).

What is the effect of interpersonal and structural discrimination on student learning? One study of the influence of racial prejudice on African American college students (Gougis, 1986) concluded that racism adversely affected their performance by increasing emotional stress and decreasing motivation. Even if a direct link is difficult to prove, Ortiz (1988) contends that discrimination creates an inferior education for Hispanic students because it results in more remedial-focused instruction, tracking, lower teacher expectations, and less positive teacher involvement with students. Oakes (1990) also concludes that differential teacher attitudes and expectations, by influencing teacher behaviors, classroom activities, and student responses to instruction, can affect student achievement.

While the influences of poverty, discrimination, and poor quality schooling on educational attainment may be difficult to trace precisely, models to explain the impact of such societal factors (e.g., Oakes, 1987; Reyes & Stanic, 1988) include not only their direct effect on individual students, but also their indirect effect on schooling opportunities (e.g., curricula and teacher expectations) and on students' responses to schooling (e.g., effort and motivation).

Overcoming Barriers

This chapter has focused on the commonalities between the majority of language minority students and native English-speaking poor and minority students. The socioeconomic circumstances they share put both groups at risk for school failure. The challenge for educators concerned with the academic achievement of language minority students is to also address the educational ramifications of poverty and discrimination. The broad scale social initiatives of the 1950s and 1960s, aimed in part at improving educational opportunity for poor and minority students, have no contemporary counterpart. Some critics of the education system (e.g. Kozol, 1991) contend that achievement patterns will not change until school funding is equalized. A review of the educational status of immigrant students concluded that, while strategies specific to their linguistic and cultural needs were important, "the most effective way to improve schooling for immigrant students is to enhance the overall capacity of urban school systems" (McDonnell & Hill, 1993).

Suggestions have been made for changing curriculum and instruction, raising expectations, improving school climate, and increasing parent involvement in schools attended by poor students. Many of these changes would also benefit language minority students. For example, the compensatory, basic skills approach to education for poor and minority students has been criticized as harming rather than helping them (Means, Chelemer, & Knapp, 1991), and changes in philosophy and practice have been recommended to benefit all students who attend poor schools, including children from non-English language backgrounds (Knapp & Turnbull, 1990):

- Discarding an emphasis on the learners' deficits; focusing on the knowledge students do bring to school
- Teaching students explicitly how to function in the culture of the school; not assuming that students automatically absorb this knowledge
- Including a combination of teacher-directed and student-directed instruction
- Replacing long-term ability grouping with a variety of arrangements, including mixed-ability groupings
- Reorienting a curriculum based on a sequence of skills ranging from "basic" to "higher order" toward an emphasis on meaning and understanding, early exposure to higher order tasks, and opportunities to learn and apply skills in context

Another way that schools can counteract societal inequity is to break the grip of low expectations for poor and minority students. Goldenberg and Gallimore (1991) document a process by which increased expectations led to higher achievement in a poor Hispanic school, resulting in an upward spiral of mutually reinforcing standards and achievement.

While schools cannot change the society around them, they can serve as model communities for socializing young people who will create the society of the future. One of the National Education Goals is to make every school a drug-free, violence-free, disciplined environment conducive to learning. But the National Coalition of Advocates for Students recommends more than removing negative influences; they advocate the creation of a school climate of inter-ethnic tolerance and understanding.

Caplan et al. (1991) recommend that schools build bridges with the ethnic communities of their students to help parents reinforce achievement aspirations in their children. Ogbu (1992) also believes that communities of African Americans and others whose children do not work seriously enough in school need to play an active role in re-defining ethnic identity in ways compatible with school success.

Implications

Studies of programs to improve the achievement of LEP and other language minority students will need to be attentive to the following sorts of issues:

- How does the school deal with the needs of students for adequate nutrition, health care, and other social services?
- How does the school involve parents in the educational life of their children?
- What efforts does the school make to become a positive force in the community?
- What has the school done to achieve a harmonious climate?
- How does the school address the students' needs for self-esteem and ethnic pride?
- How does the school set and help students achieve high academic standards?

CHAPTER 3

EDUCATION REFORM

The 1980s precipitated "the most widespread, intense, public, comprehensive, and sustained effort to improve education in our history" (Murphy, 1991, p. viii). The dissatisfaction with the state of American education expressed by the report *A Nation at Risk: The Imperative for Educational Reform* (National Commission on Excellence in Education, 1983) launched Wave I of education reform, focusing on repairing the basic system. Reform proposals aimed to fix the sagging schools by shoring them up--holding teachers and students to higher standards, increasing teacher's salaries, and providing better books and materials.

By the latter part of the decade, however, educators, commissioned panels, business leaders, and politicians were calling for more drastic reform--restructuring the educational system from the ground up (Wave II). The impetus for change came from varied quarters (Murphy, 1991):

- Business leaders charged that schools were no longer producing well educated young adults for the work force, and that the competitiveness of the U.S. in the world economy was suffering as a consequence. Recently, as the needs of business have changed in the global marketplace, and as some corporations have revived themselves by restructuring their organization, schools are being urged to use the same blueprint to radically redesign their operations.

- The number of low skill jobs is declining at a time when the number of students at risk of school failure is increasing, putting pressure on schools to find a way to help these students succeed.

- Many academics and practitioners have criticized the thrust of Wave I reform proposals that focused on raising standards by

expanding centralized controls, and have advocated more fundamental change (Wave II).

- The bureaucratic infrastructure of schools has come under attack for stifling the creativity of teachers, impeding the learning of students, and thwarting the involvement of parents.

- Concerns about the quality and motivation of the teaching force have led to calls for greater professionalization of teaching.

- School effectiveness and school improvement research have documented that improvement is an integrated rather than piecemeal process and that it occurs on a school-by-school basis, leading reformers to recommend giving individual schools more control over their operations.

The Elements of Restructuring

Wave II reform--restructuring--involves a plethora of changes that fall under three general categories (Murphy, 1991; Gandara, 1994):

- Redefining the relationships among education professionals (teachers, principals, and district personnel), and redesigning the roles and responsibilities of each

- Changing the organization and governance structures to give individual schools more authority in administering their own affairs and parents more of a voice in their children's education

- Altering what Murphy (1991) calls the "core technology"--what students learn and how they are taught

The restructuring framework published by The Center on Organization and Restructuring of Schools (Newmann, 1992) includes four arenas of change--student experiences; professional life of teachers; school governance, management, and leadership; and coordination of community resources.

(The third wave of education reform--discussed in the next chapter--goes beyond these elements to specify inputs and outputs for content-driven systemic school reform.)

Reforming the "Core Technology"

Perhaps the most dramatic departure from the educational model of the past can be seen in proposals to alter the way teachers teach and students are expected to learn. While Wave I reforms sought to improve traditional teaching and learning, Wave II reforms aim for fundamental change in the definition and goals of education itself.

Some of the changes in curriculum, pedagogy and assessment proposed by reformers (many cited by Murphy, 1991) are:

- A core curriculum for all students (Boyer, 1983)
- Interdisciplinary focus; integration of curricular topics (Sizer, 1984)
- Deep rather than broad coverage of subject matter (Sizer, 1984)
- Use of original source documents rather than textbooks (Boyer, 1983)
- Emphasis on higher order thinking skills (Anderson et. al., 1994)
- Learning experiences created by individual teachers and teams of teachers, rather than curriculum coverage dictated by textbooks

- Authentic, performance-based assessment rather than standardized examinations

- Increased empowerment of students in their own learning; "teaching for understanding" rather than accumulation and recall of facts

- Expansion of forms of teaching beyond whole-class instruction and textbook reading by individuals to include cooperative learning, small group study, and project-oriented approaches

- Renewed efforts to provide quality education to all students by "untracking" classes, grouping students heterogeneously by ability, and eliminating compensatory and remedial programs in favor of accelerated approaches

- Developmentally paced approaches to learning that emphasize demonstrated student mastery rather than accumulation of credits (Spady, 1988)

- Grouping of students by developmental level rather than age; increased use of multi-age groupings (Goodlad, 1984)

- Flexible and creative use of space, time, grouping of students, and human and material resources to best meet the needs of students

- Personalization and humanization of schooling; forging strong bonds between teacher and student (Sizer, 1984)

These proposed changes represent a paradigm shift in thinking about the way in which people learn, the purpose of education, the definition of knowledge, and the objectives for students:

From	To
Passive acquisition of knowledge	Active learner participation
Solitary study	Cooperative work
Fixed body of knowledge	Learner-constructed knowledge
Disjointed information	Thematic integration
Disconnected information	Relevant to particular students
Basic skills first, then advanced material	Higher order thinking at all levels
Different standards for different groups	Single high standard for all
Tracking	Mixed-ability groupings
Students as empty vessels	Student knowledge valued
Impersonal/standard approach	Personal/individually paced
Teacher as worker; student as product	Teacher as coach; student as worker

Embodied in this new paradigm are the notions that all students can learn complex material, that students come to school with already-formed beliefs and construct new understandings from in-school interactions with information and people, and that students learn from printed, visual, auditory, and interpersonal sources. The implication is that students can be guided into deep and critical thinking if topics are made relevant to their lives and integrated with related topics, if students are allowed some initiative in pursuing knowledge, and if they are encouraged to regard other students as resources for learning.

This conception of pedagogy is based on a view of knowledge as constructed by the learner, rather than transmitted from expert to novice. The goal of teaching in

this view is not to impart information; rather it is to stimulate students' internal motivation and develop it into a life-long drive to learn. The teacher's role is as a coach or facilitator, an experienced and knowledgeable resource for students pursuing knowledge rather than the only source of that knowledge.

Several philosophical and practical challenges must be met in order for this new paradigm of teaching and learning to become a reality. First, researchers, administrators, teachers, students, and parents must come to general agreement about goals, and second, education professionals must develop a plan for change.

Goals--What to Change

In the flurry of reform and restructuring activities during the past decade, substantive discussions about the goals of reform have often taken a back seat. Wave II reforms (for example, those promoting local control) often collide with Wave I reforms (for example, greater centralization of authority). Newmann (1992) discusses the "valued outcomes" of restructuring, and the lack of consensus that is apparent within each:

- Authentic Student Achievement--Though increased student achievement is a universal goal, pervasive disagreement exists over what should be taught and tested; conventional achievement stresses learning a body of knowledge prespecified by authorities, while authentic achievement emphasizes in-depth study of personally relevant topics that sharpens the ability to think and communicate at a high level.

- Empowerment--The restructuring movement emphasizes the benefits of giving more power to local schools, teachers, parents, and students, but provides little guidance in resolving conflicts among these groups and in educating members of these groups in their new and unaccustomed roles and responsibilities.

- Communities of Learning--The development of supportive, personalized communities of teachers and students can be

thwarted by the professionalization of educators and their specialization by subject matter, the American cultural value of individual autonomy, and cultural differentiation related to race, ethnicity, class, gender, and urbanicity.

- Accountability--The public has demanded that schools take increased responsibility for student achievement and be able to demonstrate their success relative to other schools, but there is little consensus about what the standards should be, and some fear that high-stakes accountability systems will drive reform and undermine other valued outcomes.

Implementation--How to Change

Murphy (1991) and Newmann (1993), in describing the restructuring landscape, pose the same criticism: the movement has focused on altering the form of schooling, but has given little attention to the substance. Restructuring efforts have been most active in changing the roles of teachers, administrators, and school district personnel, and in redistributing responsibility and resources from districts to the local school and community. The unspoken assumption is that content magically emerges from the new form, but both commentators express pessimism that student learning will automatically improve if schools are given more autonomy, teaching becomes more professional, and parents are permitted more choice in their children's education. "These three restructuring strategies are increasingly being treated as ends in themselves rather than as means to improved learning for students" (Murphy, 1991, p. 73).

What is missing, for Murphy, is serious attention to the teaching-learning process, what should be the "core technology" of education. He cites the lack of both well articulated theory and empirical evidence to support a connection between form and substance.

Newmann (1993) also argues that new organizational structures may be necessary, but are not sufficient to improve education. What is missing is "powerful content," a solid programmatic focus that directs participants toward the valued

outcomes described above. In addition to the conflicts over goals that Newmann cites, he poses two additional problems--re-educating teachers, administrators, and parents with a vision of schooling that they themselves never experienced, and aligning the disparate parts of the education system into a coordinated whole that supports the new vision.

Implications

The challenge for schools that are restructuring is to keep the horse (teaching and learning) before the cart (professional roles, school organization and governance), to view the latter types of changes as enablers of the former rather than objectives in themselves. From this brief overview of education reform, a number of implications emerge for studying actual schools in the process of restructuring:

- To what extent is the teaching/learning vision at the heart of the educational enterprise?

- In what way do changes in professional roles, and school organization and governance, support a reformed core technology? What kinds of changes in "form" are critical to the success of changes in "content"?

- What is the driving force that initiated and sustains the reform of teaching and learning?

- How do schools deal with a lack of consensus over teaching/learning goals, either within the school itself or between the school and district or community or state?

- What kind of retraining into new roles is necessary for teachers and students? How is this accomplished?

CHAPTER 4

EDUCATION REFORM AND STUDENT DIVERSITY

The education reform trends described in the previous chapter hold promise for poor students from ethnic and linguistic minority groups for a number of reasons:

- The ethnic, linguistic, and socioeconomic diversity of today's students, and the low achievement record of minority groups in the U.S., have been cited as rationales for many education reform proposals (Gandara, 1994).

- The fact that the future U.S. labor supply will depend heavily on minority youth (McDonnell & Hill, 1993) has spurred renewed concern with their educational achievement.

- Equity is viewed as a valued outcome of education reform (Newmann, 1992).

A combination of circumstances favors increased equity--a changing marketplace requiring more well educated workers, the increasing diversity of the student population, and the emerging belief that all students are capable of challenging academic work (Murphy, 1991).

Several elements of the current wave of education reform have the potential to benefit a diverse population of students, including those from ethnic and linguistic minority groups. Local control of budgeting and curriculum, for example, could enable schools to tailor their programs to better serve the needs of their particular mix of students. Many of the tenets of school reform (such as high expectations, active learning, cooperative learning, integrated thematic instruction, block scheduling, authentic assessment, heterogeneous grouping, parent involvement, integrated social services, etc.) have also been suggested as promising innovations for students from groups with a history of low academic achievement.

However, both practical and philosophical challenges must be met if education reform is to benefit all segments of the student population, including LEP students. The major practical challenge is to equalize the distribution of human and financial resources among schools, and the major philosophical challenge is to genuinely include ethnic and language minority students in reform efforts.

The Challenge of Human and Financial Resources

Advocates for poor, minority, and LEP students express the fear that reform will further disadvantage these students because their schools do not have human and financial resources equivalent to schools in wealthier neighborhoods:

- Current reform efforts, as well as existing federal programs, fail to address the special needs of urban districts that enroll many LEP, immigrant, and ethnic minority students; such efforts are based on the inaccurate assumption that big-city schools have a solidly adequate foundation on which to build new programs or use extra targeted resources (McDonnell & Hill, 1993).

- "Policies for reform have given little attention to organizational mechanisms that might respond equitably to escalating pluralism;" instead, "aspects of the restructuring movement (e.g. site-based management, teacher empowerment, choice plans) can exacerbate inequities by neglecting to address the issue directly" (Newmann, 1992, p. 6).

- "School restructuring, if it works, will create serious problems of equity among schools" (Elmore, 1988, p. 28), with a tendency "to design for schools in affluent areas curricula which will be culturally rich and cognitively demanding, and for schools in poor areas curricula which impose much lower expectations on the students' capacity for intellectual development and hard work" (Watt, 1989, p. 23), a fear borne out by Watt's study of the implementation of site-based management in South Australia.

- More meaningful methods of measuring authentic learning, such as student portfolios, teacher observations and notes, tests with open-ended questions, have been advocated (First et al., 1991). But many of the assumptions about the benefits of performance-based assessment are unproven; such assessments are likely to widen the gap between advantaged and disadvantaged groups, and are more susceptible to scorer bias than "objective" measures (Linn, Baker, & Dunbar, 1991).

- Increasing high school graduation requirements may only disadvantage even further students who are not proficient in English, because few high schools offer sufficient native-language or English support to enable students to progress toward graduation. A study of California high schools found that many such students were tracked into non-college-prep courses that did not even count for high school graduation (Minicucci & Olsen, 1992).

- Increasing requirements for teacher certification will decrease the supply of bilingual teachers and the cultural diversity of the teaching force, depriving students from non-English backgrounds (Gandara, 1994).

The Third Wave

Many of these challenges are being addressed in what might be characterized as the third wave of education reform, a perspective that examines the resources available to schools as well as measuring school improvement. From this perspective, it makes no sense to increase high school graduation requirements unless schools are able to offer all students a reasonable chance to meet those requirements. Like Wave II reform, the third wave (described as content-based systemic reform by O'Day & Smith, 1993) calls for *all* students to be held to the same high standards, but permits them to take different paths.

> Individual schools, to maximize the opportunities for their particular students, must be free to choose the instructional strategies, language of instruction, use of curriculum materials, and topics to be emphasized. (O'Day & Smith, 1993, p. 265)

Not only does the third wave speak directly to the concerns of poor, language minority, and ethnic minority students, but it makes equity of opportunity a cornerstone of education reform. O'Day and Smith focus considerable attention on the inputs to the system as well as the outcomes. Because "resources for change vary greatly within the system" (p. 259), so that schools with large numbers of disadvantaged students are less likely to be able to implement reforms, equality of *access* is a major issue:

> The approaches taken by all schools must be based on common curriculum frameworks and all students must be *expected* and *given the opportunity* to perform at the same high standards on a common assessment. (p. 265, emphasis in original)

Content-based systemic reform would ensure that national and state education agencies and policies provide local schools with the resources *and* give them the responsibility for offering all students an equal opportunity to learn and perform at a high level. A "performance-based accountability model with clearly defined outcome standards for schools" (p. 270) would evaluate whether schools:

- have the essential human and material resources (*resource standards*)
- actually implement a program likely to provide opportunity to learn (*practice standards*), and
- meet challenging goals (*performance standards*) (pp. 275-276)

Performance standards could be used to ensure equity by "defining acceptable school performance not only in terms of the total student body but also in terms of major sub-groups within the school" (p. 278).

O'Day & Smith's (1993) concept of "content-driven systemic reform" addresses questions raised by Newmann and Murphy about "powerful content" and "core technology" as well as concerns about the fate of poor, minority, and LEP students in restructuring schools. The model described by O'Day and Smith provides a vision that unites the interests of educationally privileged students in a "quality education" and the concerns of disadvantaged groups for "equal educational opportunity." Systemic reform links quality and equality by defining a quality education as "the opportunity to learn well the contents of the frameworks. Equal educational opportunity might then be achieved by providing all students a quality education" (p. 273).

A report for policy makers on reforming Chapter 1 and Title VII legislation (August & Hakuta, 1993), applies this third wave perspective to LEP students in recommending that the federal government encourage state education agencies to include these children in a comprehensive plan for systemwide reform. Such a plan would:

- develop high content and performance standards for LEP students that are the same as those established for all other students, with full inclusion in the development process of persons knowledgeable about the education of LEP students

- develop opportunity-to-learn standards adapted to the unique situation of LEP students

- develop assessments of student performance and opportunity to learn that are appropriate for LEP students

- develop a system of school and local education agency accountability for LEP student outcomes and opportunities to learn

- make special efforts to ensure an adequate supply of teachers well prepared to educate LEP students (August & Hakuta, 1993, p.3)

The Challenge of Genuine Inclusion for Language Minority Students

While the practical challenges to re-designing education to foster the success of all segments of a diverse student population (including those from linguistic minority backgrounds) are formidable, perhaps the most significant challenge is philosophical. Three separate research and policy dialogues have focused on students as if they constituted three separate groups:

- "Disadvantaged," "at risk" students (poor, urban, racial and ethnic minority youth), for whom programs such as Head Start and multicultural education were designed--research has stressed the social preconditions for learning and strategies to counteract social disadvantage

- LEP students, for whom programs such as bilingual education, ESL, and sheltered English were designed--research has concentrated on the processes of native and second language development, and on cultural influences on learning

- The "generic" or "universal" student, at whom the current education reform and restructuring proposals are directed--research has focused on theories of learning and conditions of instruction

In reality, these are not separate populations. The challenge is to move beyond discussions of reform for the mythical generic student to understand and include the needs of particular groups. Although the needs of language minority students have been cited as rationales for reform, language minority students themselves are seldom mentioned in specific proposals. A survey of articles published in the *Phi Delta Kappan* during the past decade (Gandara, 1992) found that only 16 (4%) of 362 articles on school reform (fewer than 2 per year)

mentioned such students at all, even though they comprise a large percentage of the student body in many schools.

Neither reform proposals nor actual programs give sufficient attention to the differences among students, including differences in language and culture. Instead, reform proposals assume that changing schooling will affect all students beneficially, and equally (Gandara, 1994). For example, as a report on the educational status of immigrant students concludes, "Current reform proposals do not contemplate the creation of new curricula for students who cannot profit from full-time instruction in English, nor do they remedy the shortages of teachers and texts that can provide a bridge between immigrant students' native languages and English" (McDonnell & Hill, 1993, p. 107).

The scant research on the impact of education reform on language minority students indicates that schools are struggling with how to apply reform tenets to a student population that is diverse ethnically and linguistically. A recent study of California schools engaged in restructuring efforts (Olsen et al., 1994) asks: "To what extent is school restructuring as a policy and reform movement resulting in attention to cultural, racial and linguistic diversity?" (p. 13). The following areas of concern identified by the study--specifically related to language and cultural diversity--illustrate the formidable barriers that need to be overcome in order to achieve genuine inclusion:

- The desire to create an inclusive dialogue can be counteracted by the fear of raising volatile issues of race, culture, and language; by the resentments among different sectors of the faculty (White vs. minority, monolingual vs. bilingual, teachers vs. aides); and by inadequate mechanisms for parent and community participation. As issues are suppressed and diverse voices are not heard, restructuring can serve merely to recast the old power relations in a new form.

- Many teachers are enthusiastic about their new role in collaborating to develop curriculum, but those who formerly had no contact with students with limited English are ignorant of their needs.

- Efforts to involve parents and community members are complicated by culture and language differences between faculty and parents and among parent groups, and by disagreements between parents and school personnel about the proper parental role in education.

- In the push to alter the traditional grouping of students (by age and ability), insistence on heterogeneous groupings can work to the detriment of LEP students if they are "placed only in the regular program where teachers lack adequate training and strategies to assure their full participation" (p. 174) or if LEP students are "thrown together because they cannot be accommodated anywhere in the `regular' reformed structures." (p. 175)

- "Multicultural curriculum is not a feature of the school restructuring movement. And yet, the research on effective instruction for cultural and ethnic minority students again and again has identified it as key for diverse students having access to the school program." (p. 182)

Schools in the process of restructuring need help in developing strategies for including all segments of the diverse population. At one school studied by Olsen et al. (1994), all the students--except LEP students--were re-grouped into "houses" where they stayed with the same contingent of teachers for several years. One LEP student commented, "We are the homeless of the school. We do not get a house. When you do not speak English, you are homeless" (p. 211). Olsen et al. concluded, "In schools with relatively small LEP populations, the bilingual and ESL teachers often spoke of feeling marginalized, and were sometimes completely left out of the restructuring process, either because they are more recently hired, because their students are not considered a significant part of the school, or because their programs have less prestige" (p. 73).

Strategies for Inclusion

Creating the kind of environment that will foster the educational success of language minority students will require educators to meet the challenge of genuinely including these students in restructuring efforts. One example of a model for inclusion is a list of features synthesized from a study of six high schools that were effective for students from Spanish speaking backgrounds (Lucas, Henze, & Donato, 1990):

- Value is placed on the students' language and cultures.
- There are high expectations of language minority students.
- School leaders make the education of language minority students a priority.
- Staff development is explicitly designed to help teachers and other staff serve language minority students more effectively.
- A variety of courses and programs for language minority students is offered.
- A counseling program gives special attention to language minority students.
- Parents of language minority students are encouraged to become involved in their children's education.
- School staff members share a strong commitment to empowering language minority students through education.

Lucas (1993b) notes that, if "students" were substituted for "language minority students," this list would be almost identical to a list of characteristics of effective secondary schools that emerged from a review of ten studies (Fullan, 1990, cited in Lucas, 1993b). The difference is in the details, and in the commitment

required to translate lofty goals into practice, as demonstrated by the ways features were operationalized in the schools serving language minority students studied by Lucas et al. (1990). Such schools:

- Encourage students to develop their primary language skills; allow them to speak their native language
- Offer advanced as well as basic bilingual/content-ESL classes in content areas
- Establish academic support programs that help LEP students make the transition from ESL and bilingual classes to mainstream classes
- Expect and encourage LEP students to go to college; provide counseling assistance in helping them plan, apply, and gain parents' support for college
- Hire bilingual and minority staff as teachers and counselors; promote them to leadership positions
- Provide staff development for teachers and other school staff in effective instructional approaches for language minority students, principles of second language acquisition, the cultures and languages of the students, cross-cultural communication and cross-cultural counseling
- Involve parents by hiring staff who can speak their languages, sponsoring adult ESL classes, holding parent meetings at convenient times or in the community, and soliciting their input in planning their children's course schedules
- Offer extracurricular activities, participate in community activities, take part in the political process, and act as advocates for language minority students

Promising Approaches

Some schools are moving in a direction that can have promise for language minority students by combining restructuring tenets with the kinds of effective practices for language minority students described above. The model of "accelerated schools" pioneered by Levin and his colleagues (Levin & Hopfenberg (1991) provides students from typically at-risk groups with the kind of enriching learning opportunities usually offered only to students in gifted programs, giving them a real chance to catch up. Some schools have adapted this model to incorporate the needs of LEP students as well as English-language background minority students.

This approach has also been successful in preparing low-achieving high school students from linguistic minority backgrounds for college. In the AVID "untracking" program, several high schools in San Diego, California, placed high-potential/low performance students in college prep courses and gave them intensive support and assistance. More than 90% of these students went on to a two- or four-year college, compared to 54% of all students in the San Diego high school system (Mehan et al., 1992).

McDonnell and Hill (1993) studied several newcomer schools and programs, designed to assist newly arrived immigrant students educationally and culturally. Because these programs were new and regarded as innovative, they were able to attract hand-picked faculty, a large percentage of whom were bilingual, as well as the volunteer services of businesses and community organizations. The schools and classes were small, and faculty strove to establish warm personal relationships with students. Home visits and family assistance with social and health needs were also features of the programs. Faculty played a large role in adapting the curriculum to student needs, and the curriculum was more integrated across subjects and grade levels than at regular schools.

McDonnell & Hill were clearly impressed with the newcomer schools in their study. "In their clear sense of mission, innovative curricula, professional teaching staff, and links to the larger community, they represent the kinds of schools to which all children, immigrant and native born, should have access" (p. 97). Unfortunately,

because of higher per-pupil costs, such programs are unlikely to reach even the immigrant students who need them the most.

An analysis of effective schooling practices for Latino and other language minority students (Garcia, 1991) demonstrates the application of education reform tenets in an inclusive atmosphere. Principals in the successful programs supported and gave autonomy to teachers. Teachers emphasized communication with and among students, encouraged collaborative learning, allowed students to progress naturally from native language to English, and organized instruction around themes influenced by the students' interests. Teachers worked cooperatively with parents, and, perhaps most important, were committed to their students' high achievement. "They were proud of their students--academically reassuring but consistently demanding. They rejected any notion of academic, cultural, or intellectual inferiority in their students" (p. 6). Teachers with such positive attitudes may be the most important key to the success of all types of students.

Implications

To become widespread, programs that are effective with new immigrants, LEP students, or disadvantaged students need to be perceived as an integral part of education reform, rather than programs for special populations. Studies of actual programs will need to address the following questions:

- How are teaching strategies, curricular materials, etc., adapted to the particular mix of students in the school?
- In what way are all students expected to achieve to high standards?
- In what way are all students given an equal opportunity to learn?
- What kind of staff development is offered to enable all teachers to deal with issues of race, culture, and language?

CHAPTER 5

THE INFLUENCE OF CULTURE

Programs that provide language minority students a true opportunity to learn challenging material require adequate human and financial resources. They also must meet the challenge of understanding the impact of culture difference on teaching and learning. This chapter will review the literature on the special needs of language minority students related to their cultural backgrounds, and will illustrate how an understanding of cultural influences can inform educational practice. Educators should, however, be cautious about stereotyping cultural groups and relying too heavily on cultural explanations:

- Cultural influences on learning are only one piece of a complex whole; disparities among groups in achievement cannot be attributed solely to cultural differences.

- Cultural subgroups may differ widely from each other. For example, to speak of "Hispanic" culture is almost meaningless. Students from Mexican, Puerto Rican, Cuban, Central American, and South American cultures may perceive themselves as belonging to different cultures despite their common language.

- There can be as much diversity within a cultural group as there is between groups.

- Cultural practice and identity are optional, not obligatory. Individuals vary widely in allegiance to, participation in, and identification with "their" culture.

- The differences in socioeconomic status discussed in Chapter 2 may be more significant than cultural differences in accounting for academic achievement.

Cultural Discontinuity

One explanation for the poor academic achievement of students from language minority backgrounds is that their home culture differs significantly from that of the school. This thesis focuses on the mismatch between what students bring to, and find at, school.

In a monocultural society, the cultural aspects of schooling may be invisible; teachers and students share the same assumptions, background knowledge, values, learning styles, and patterns of interaction because they were raised in the same culture. When a European American teacher has students read about Dick, Jane, and Spot, or about Halloween, she doesn't have to explain why a brother and sister play together, live only with their parents in a house, and keep a dog as a pet. She doesn't have to explain why children wear costumes and go from house to house asking for candy. She doesn't have to explain why stories begin, progress, and end in a certain predictable pattern. She assumes that the story is a neutral context for teaching students to read and comprehend.

In culturally diverse societies, one would expect cultural factors to leap into the foreground. But they don't always identify themselves clearly. Cultural differences may be the unrecognized force behind misunderstanding and hostility between teacher and student, resulting in students' disengagement from school. When the majority of students from non-English language backgrounds are taught by teachers with European American backgrounds, the potential for misunderstanding is multiplied.

When students don't respond as teachers expect, teachers may begin to view them as having low academic ability. A student who misinterprets Dick and Jane's relationship with Spot because her culture has no notion of a pet animal, or who has different cultural associations with ghosts and witches, may seem to the teacher merely to be a poor or unmotivated reader. The teacher may begin to lower her expectations of that student, leading to the student's actual underachievement.

Students from immigrant families, who must adjust to a completely new language, culture, and school system, may also experience the anxiety, frustration,

anger, and depression associated with culture shock (Adler, 1972; Foster, 1962). A nationwide project on immigrant children in U.S. schools (McCarty First & Willshire Carrera, 1988) "found culturally-based practices and behavior to be a major source of confusion and conflict for young immigrants" (p. 19).

Students from non-English language backgrounds who are adjusting to an alien language and curriculum rarely have assistance from a teacher who shares their own cultural and linguistic background. The growing diversity in the student population stands in stark contrast to the homogeneity of the teaching force. While one-third of students are from ethnic or racial minority groups, less than 10% of teachers come from these groups (McLaren, 1988). Of the new teachers in 1990, 93% are White (NASBE, 1991).

The majority of policy makers, administrators, and teachers experienced home and school lives that were culturally congruent. They face the challenge of developing policy, programs, and effective instructional practices for students straddling different cultural worlds.

At the School Level

Schools can assist students in bridging different cultures by hiring personnel who represent the native cultures of the students; by providing staff development in the cultures and languages of the students, in cross-cultural communication and counseling; and by considering cultural differences as a resource for learning and enrichment rather than an obstacle to be overcome. Indeed, there is some evidence that culture difference can enhance achievement.

Overall, the dropout rates for Asian and Hispanic immigrants are extraordinarily high, as documented in Chapter 1. But some studies find immigrant groups achieving at higher than expected, and even higher than average, rates. One study (Matute-Bianchi, 1986) found that, among students from Spanish language backgrounds, recent immigrants and those who identified most strongly with their Mexican heritage were more successful in school than those with weaker emotional ties to the Mexican culture. Studies of Punjabi (Gibson, 1987) and Southeast Asian

(Rumbaut & Ima, 1987; Caplan et al., 1991) immigrant students also found that academic success was correlated with maintenance of their culture of origin.

The conclusion to be drawn from these studies is not that immigrants and other language minority students can succeed without special help, for that contradicts what we know. Rather, these studies imply that cultural and linguistic assimilation are not prerequisites to educational success. They highlight the importance of cultural factors and the positive role they can play in educational achievement, and have led to a view that cultural differences can be educational resources instead of obstacles.

One way that schools can validate and capitalize on students' cultural backgrounds is to include various cultures in school curricula. Sleeter & Grant's (1988) typology of the five approaches to multicultural education found in schools illustrates that being "culturally inclusive" can have quite different manifestations:

- The Teaching the Exceptional and Culturally Different Approach aims to help students of color succeed by providing bridges between their background and "mainstream" society.

- The Human Relations Approach fosters positive relations among student groups; it focuses on how students feel about and treat each other.

- The Single-Group Studies Approach teaches about the history, culture, and contributions of a minority ethnic group.

- The Multicultural Approach seeks to reconstruct the education process by incorporating cultural diversity into curriculum and staffing, and by eliminating practices that impede equity, such as tracking.

- The Education that is Multicultural and Social Reconstructionist Approach builds on the previous two approaches and in addition teaches students to engage in social action to overcome inequality and oppression in society.

Schools that embrace the most far-reaching form of multicultural education--one that aims for social change--see their purpose as leading toward the future rather than passively reflecting the status quo. This spirit is exemplified by the testimony of William Waxman, the principal of an elementary school confronted with an influx of Cambodian children, to the Immigrant Student Project of the National Coalition of Advocates for Students (McCarty First & Willshire Carrera, 1988). Waxman noted that the school's welcoming approach to these children, which included assigning each child an American "buddy," contrasted with the resentment expressed among adults in the community toward the newcomers. Waxman testified that "we've told the children that the elders will have to learn from them. Bring your friends home, introduce them to your parents" (p. 86).

Some programs combine elements of the five approaches:

- Moll (1992) recommends that students' cultural "funds of knowledge" be used as a foundation for instruction. Moll describes a teacher who used the expertise of her students' families in construction-related occupations to teach about the history of dwellings, professions involved in construction, and mathematical concepts used in constructing buildings.

- A project in San Diego, California, to increase the writing skills of secondary school Spanish-English bilingual students was derived from community concerns about immigration, unemployment, and bilingualism; students developed and administered a survey on bilingualism to community members (Villegas, 1991).

But few schools have made more than token efforts in the direction of multicultural education. Even in California, where the student population is the most diverse in the country, only a handful of schools that are in the process of changing educational practice "viewed multicultural curriculum as a key facet of their restructuring" (Olsen et al., 1994, p. 181). Olsen et al. identified the following features of these rare schools:

- Schoolwide multicultural curriculum demands curriculum development. Standard texts are insufficient, and teachers and librarians spend "huge time `scrounging'" for appropriate materials.

- Multicultural curriculum is concerned with the languages as well as the cultures of all students. The researchers "found a very close relationship, almost a one to one overlap, between those schools centrally focused on building a strong LEP program and those focused on multicultural curriculum." (p. 184)

- Multicultural curriculum involves a focus upon community building and anti-prejudice learning school-wide. Schools helped students develop personal awareness and bonds across ethnic groups, taught communication and conflict resolution skills, and gave students a historical perspective on prejudice and oppression.

At the Classroom Level

What are the implications of culture difference for teaching and learning? Understanding cultural influences can affect *how* students are instructed as well as *what* they are expected to learn. Researchers have recommended making instruction and curriculum more culturally congruent by using culturally sensitive pedagogy (Tharp, 1994) and feedback (Scarcella, 1992), and by developing culturally inclusive curricula (Sleeter, 1994) or modifying and broadening standard offerings (Richard-Amato & Snow, 1992).

Instruction

All students, but particularly those not fluent in English, may suffer from the kind of "traditional" instruction labeled the "recitation script" (Tharp & Gallimore, 1988), in which teachers spend the majority of class time explaining, discussing, and quizzing students on assigned textbook readings. Even in culturally homogeneous

classes of White, middle class students taught by a teacher from a similar background, this method may work well for only a minority of students. Successful students in such an environment are likely to:

- be motivated to get good grades by competing with other students, despite the dullness of the material or tediousness of workbook exercises
- be able to learn easily by reading silently, working individually and listening to lectures
- be able to extract information quickly and accurately from printed text
- be test-wise and teacher-wise, knowing the kinds of answers that tests and teachers consider exemplary
- be able to work quickly, especially on timed tests
- submerge their own interests and curiosity in favor of the learning priorities of the teacher and textbook
- know how to acquire and remember information and perform well in this environment automatically, without needing much explicit instruction in how to learn

The emphasis on speed, individual work, competition among students, learning by reading, and the authority of the book and the teacher, reflects American cultural values. It contrasts sharply with practices and values of other cultures. For example, in Hispanic and native Hawaiian cultures, collaboration, cooperation, and working with peers are common, and in some American Indian cultures, humility is stressed and individual competition avoided (Tharp, 1994, ERS, 1991).

Different cultures not only encourage different ways of working, but also may have different modes of learning and communicating. One cognitive variable thought

to differ among cultures is holistic/visual vs. verbal/analytic thought (Tharp, 1989, 1994). There is some evidence that native Hawaiian and American Indian groups respond better to information presented visually and with a holistic emphasis that does not analyze phenomena by breaking them down into their component parts. Adults in these cultures may instruct children by requiring them to observe an entire task, or listen to a whole story, without asking questions.

If schools require individual competition and if the instruction is abstract rather than contextualized, students from cultures that emphasize cooperation over competition and rely on information presented in context may be at a disadvantage. Conversely, it has been suggested that the cultural congruence between the learning styles prevalent in some Asian societies and those emphasized in American schools accounts for the academic success of some Asian immigrant students (Stigler & Baranes, 1988-89; Caplan et al., 1991).

One approach to making teaching styles more compatible with students' cultural background is to tailor instruction to the particular group. For example, some teachers have had success in channeling the motivation of African American students toward greater learning by capitalizing on the peer group interactional style of challenge and public display of talent (Williams, 1981).

This approach also underlay the Kamehameha Early Education Program (KEEP) initially designed for native Hawaiian children (Tharp, 1989). Student achievement improved when children were organized into small working groups, and instruction was centered around the lively, fast-paced, overlapping conversations common in Hawaiian culture. The identical structure was unsuccessful when introduced in schools for Navajo children, whose culture requires self-sufficiency and discourages cross-sex interaction. Navajo students responded more positively when the classroom was re-organized into same sex groups, and when teachers allowed students to work and respond individually in the long, patient turn-taking style found in Navajo culture.

Tailoring instruction to a particular cultural style has limitations, however, and is impractical in cases where students in one classroom represent several different cultures. What most advocates propose instead is a model of mutual accommodation in which both teachers and students adjust their actions with regard

to the common goal of academic success with cultural respect (Villegas, 1991). Rather than redesigning teaching practices to be entirely culturally congruent with students' backgrounds, teachers can diversify instruction by selectively emphasizing techniques within the existing repertoire of teaching behaviors that complement the cultural characteristics of students (ERS, 1991).

Communication between Teacher and Students

Conversational protocol, non-verbal behavior and gestures, and conventions of personal space and politeness differ greatly among cultures and may influence how students perceive and learn. Among the differences that have been found to affect schooling are narrative style (the way in which stories are told), wait time (the length of time between speakers' utterances in a conversation), rhythm (the tempo and vocal inflection of speech), and participation structures (the way in which members of the culture typically converse) (Tharp, 1994).

Sociolinguistic studies by Heath (1982) of three groups of children--all native English speakers--demonstrate how cultural differences can impact school success. The middle-class White children she observed were exposed at home to the kinds of literacy practices that closely approximated those of the school. In contrast, working class White and Black children experienced two different patterns of language socialization at home, patterns at odds with that of the school.

When the sociolinguistic patterns of teacher and student do not correspond, students may be unresponsive or may become disruptive. When the patterns of teacher and student match, students feel more comfortable and are able to express their knowledge and interest (Tharp, 1994).

An important aspect of offering culturally sensitive instruction is receiving and providing feedback in a manner compatible with students' culturally influenced expectations. Scarcella (1992) discusses the dimensions of feedback that may cause misunderstanding if teacher and student do not share the same cultural background:

- The cues students use to show interest and understanding: students from some cultures may nod to indicate that they are listening, not that they understand. Children in many cultures show respect by looking down. American students may indicate interest with a greater show of enthusiasm than students from some other cultures.

- The way students interpret praise and criticism: "Language minority students may find mainstream American praise effusive, insufficient, or inappropriate. They may also fail to recognize...efforts to give them positive feedback" (p. 130).

- The way students interpret error correction: Some cultures place much importance on proper form, while others see children as gradually adopting adult patterns by example.

- The way students request clarification or assistance: Students from some cultures feel that questioning the teacher is disrespectful; other may indicate their need for help with gestures rather than words.

- The reaction of students to being "spotlighted"--called on by name and asked to perform correctly in front of others: Students from some cultures find this practice embarrassing and confusing.

- The questioning and answering patterns of teachers and students: In some cultures, adults do not ask children questions to which they already know the answer, or ask children to express their opinions, both common practices in American schools.

- The ways in which students may respond differently to different speakers: "In many cultures feedback patterns vary as a function of age and gender" (p. 136).

Classroom Organization

While instruction for homogeneous groups of students can be tailored to their cultural patterns, this approach may overlook the variation *within* each culture (ERS, 1991). It also is not feasible for a group composed of children from several cultures. The only way to ensure that students with diverse learning styles have a real chance to learn is to offer a variety of teaching styles and learning environments in addition to the traditional whole class lecture/discussion.

Many of the innovative alterations in the grouping of students and the presentation of material that have been recommended for students who are low achievers also have the potential to benefit students from different cultural backgrounds:

- Cooperative learning assigns students to work collaboratively in small groups, allowing those whose English is not proficient to contribute their own strengths to a project. A review of 122 studies conducted between 1921 and 1981 (Johnson et al., 1981) found that cooperative learning promoted higher achievement than competitive and individualistic learning experiences for all students, most particularly for the normally low achieving students. There is some evidence that the performance of Hispanic students improves even more than that of other groups under cooperative learning arrangements (Slavin, 1983).

- Mastery learning enables students to work at their own pace rather than being bored with a too-slow or frustrated with a too-fast lockstep curriculum. Given this time flexibility, students whose English is not proficient or who may be struggling to understand a new culture may nevertheless be able to learn the same material as others. Using a mastery learning approach enables about four-fifths of students to achieve at the same level as the upper one-fifth taught in the traditional manner by the same teacher (Bloom, 1981, cited in BW Associates, 1988).

- Heterogeneous ability grouping allows students advanced in one area to learn by teaching and leading; it gives those having difficulty a chance to learn from multiple "teachers." Studies of peer teaching have found that reading, math, and self-concept scores increased for the students assisted and for the students doing the assisting (Richard-Amato, 1992). Using this approach allows students who are more acculturated or more fluent in English to help students who are novices.

- Multi-age grouping provides even more opportunities for individualizing the pace of learning and may capitalize on the strengths of sibling teaching that is common in some cultures.

- Experiential learning expands the range of learning modes beyond reading and listening. Students whose English is not proficient can still learn the material and simultaneously develop their English by using the language in context. They can experience the school culture in a naturalistic manner that is also relevant to their studies.

- Multi-year classes, in which a teacher stays with the same group of students for more than a year, allow the teacher to gain a better understanding of each student's background and particular needs and enables the students to become skilled cooperative workers.

Re-designing teaching and learning for students from different cultural backgrounds means incorporating opportunities for multiple learning modes into teaching and expanding pedagogy beyond direct instruction to include active, student-directed learning, in which students and teachers are empowered as co-creators of the learning task.

Modifying Standard Instruction

Students from various cultures come to school with different background knowledge. Immigrant students in particular may lack the basic information about

American culture that school materials and practices are based on. Teachers can often make their instruction more accessible to immigrant students and others not proficient in English by making simple alterations in the classroom and in the presentation of material:

- Non-verbal signs and cues can be used, such as a "speak no evil" monkey sign to indicate quiet areas, or a hat rack in the art center with as many painters caps as the number of students allowed to use the center at one time (Enright & McCloskey, 1992).

- Written text that contains cultural background information unfamiliar to some students can be transformed into a visual presentation. For example, a history lesson on the first American colonies could be presented with a notated map of the east coast of the U.S. (Short, 1992).

- Lecture material can be restated in other ways, demonstrated visually, or recorded on tape for later review by students (Richard-Amato & Snow, 1992).

An additional departure from standard teaching methods would benefit language minority students--making the implicit explicit. In addition to the factors already discussed, students from non-English language backgrounds may have difficulty in school because they lack familiarity with the "hidden curriculum" or "culture of the classroom."

In a preliminary study of the effect of "untracking" classes on ethnic and linguistic minority students in San Diego public schools, Mehan et al. (1992) conclude that the success of the program is partly attributable to a support course that "explicitly teaches the implicit culture of the classroom and overtly exposes students to the hidden curriculum of the school" (p.32).

Along similar lines, Collins, Hawkins, & Carver (1991) advocate a "cognitive apprenticeship" approach for disadvantaged students, designed to teach not only

subject matter knowledge but also strategies for approaching and solving problems and for learning new material.

Implications

Programs that provide language minority students with an equal opportunity to learn take account of students' cultural, as well as linguistic, backgrounds. An examination of such programs would inquire into the following types of questions:

- To what extent do students have access to adults at school who share their cultural background?
- What kind of professional development in the impact of culture on learning and communication is offered to all staff?
- How is knowledge of, and respect for, the cultures of the students manifested in the school and classroom?
- How is cultural material included in the curriculum?
- How are culturally influenced styles of learning accommodated in the classroom?
- How does the school anticipate and resolve inter-ethnic conflict among students and staff?

CHAPTER 6

LANGUAGE AND LITERACY: LATE ELEMENTARY SCHOOL LEVEL

The most obvious difference between students who are native English speakers and those from non-English language backgrounds is that the latter may lack sufficient proficiency in English to succeed in English-medium classes. It is not only common sense, but also a U. S. Supreme Court ruling (Lau v. Nichols, 1974) that such students require special assistance to help them overcome this barrier.

But the Supreme Court did not mandate a specific remedy, and political arguments over bilingual education vs. English as a Second Language (ESL) instruction have hampered a comprehensive approach to developing language services to LEP students (Padilla et al., 1991). A major challenge for schools is deciding whether, and to what extent, language programs for LEP students should include support and development of native languages as well as English. The term "language development" is used in this chapter because it can be interpreted to mean English language development, native language development, or both. The controversy over language education goals for LEP students will be addressed more fully at the end of this chapter.

In addition to philosophical controversy, schools face formidable practical challenges in designing language development programs for LEP students that provide these students with an equal opportunity to learn.

Administrative Challenges

The major challenge for school principals and other administrators is determining the language needs of the particular students in the school and matching them with the available human and material resources. Determining need is not a simple matter. There are no nationally accepted criteria and procedures for identifying students with limited English proficiency (CCSSO, 1990). Each state uses a different definition of LEP, and uses a different measure of English language

proficiency. This means that students eligible for special language programs in one state may, in another state, be considered fluent enough to attend English-medium classes. This situation poses particular problems in placing LEP students who move from one state to another.

The measures used to determine English proficiency may underestimate the need, particularly if they are based on informal teacher ratings. According to the National Education Longitudinal Study of 1988, reported in *Numbers and Needs* (1992, September), teachers misclassified as coming from monolingual English-speaking homes 47% of Asian and Pacific Islander and 41% of Hispanic eighth graders who actually came from homes in which other languages were spoken. About a quarter of the unrecognized language minority students rated themselves as having difficulty with English, and self-rated English difficulty correlated with poor achievement scores in other subjects.

Classifications of limited English proficiency based on oral English fluency alone may also underestimate the need of language minority students for language assistance. According to the 1990 Census, 6.3 million school-age youth speak languages other than English at home. But a much higher number--11 million--come from language minority homes, homes in which languages other than English are spoken. Many of the 4.7 million children from language minority families who *speak* English at home may have insufficient academic proficiency in reading and writing in English (*Numbers and Needs*, 1993, March).

Once the language development needs of the students have been determined, other administrative challenges include designing appropriate programs, balancing what is desirable against the resources available to implement the programs, and monitoring the programs.

Appropriate Programs

A major challenge is providing any kind of language assistance to LEP students at all. A quarter of LEP students receive no extra language-related educational services to help them succeed in English-medium classes. Many receive

insufficient English language instruction and little native language support, and many are inappropriately placed in special education classes (CCSSO, 1990).

A second challenge is selecting the right kind of program to match student needs and the educational priorities of the state and community. Several types of special language programs exist for students with limited English proficiency (Rennie, 1993). *ESL*, *structured immersion*, and *sheltered English* models use English as the language of instruction; ESL classes focus on teaching the language, while the latter two models combine language- and content area-instruction.

Bilingual programs use the students' home language, in addition to English, for instruction. *Early-exit* programs--by far the most common--provide initial instruction in the students' home language, with rapid transition into English-only classes by the end of the first or second grade of elementary school. Exclusive reliance on an early-exit model may result in mainstreaming students too early; experts estimate that children require at least 5-7 years to learn a second language (CCSSO, 1990).

Late-exit bilingual programs use the students' native language more frequently and for a longer period than early-exit programs. Late-exit programs may use the home language for instruction 40% or more of the time, throughout the elementary school years, and even for formerly LEP students who have been reclassified as fluent in English. *Two-way* (or developmental) bilingual programs use English and another language to provide instruction to classes composed of approximately half language minority students from a single language background and half language majority (English-speaking) students. Both groups of students develop their native language skills while acquiring proficiency in a second language.

Administrators must not only select the most appropriate model for a language development program, but must also take care to adapt it to the particular students involved. Off-the-shelf programs for a native language group or grade level may not serve a school's particular students well. For example, bilingual education programs in general were designed for U.S.-born students who enter the American school system as kindergartners; they may have to be modified to meet the needs of older and immigrant students (McDonnell & Hill, 1993). The ideal program for

LEP students in the late elementary grades does not exist, and should not be the goal of program development. Rather, programs should be designed for the particular students involved, and must take into account factors such as the students' native and English language proficiency level, parent and community preferences, the students' recency of arrival to the U.S., and the kinds of language development support students are likely to receive in middle school.

Availability of Resources

Bridging the gap between the ideal and the possible depends on the availability of human and material resources. In some cases, the student population has changed so rapidly that schools have difficulty in responding appropriately. Teachers in a school with a large Spanish-speaking population may seek language training in Spanish, for example, only to have the population change the next year so that few Spanish-speaking students, but many Vietnamese-speaking students, now attend the school.

Schools may be overwhelmed by the number, diversity, and high turnover of students needing special language services; at some schools a majority of students are not proficient in English. The number of LEP students in California alone has nearly doubled in the past five years (California State Department of Education, 1992).

In theory, schools should offer their LEP students the kind of language development programs that best meet their needs. In practice, however, the type of program offered depends more on the qualifications of the available teachers than on the needs of the students. The program models described above require teachers with different types of preparation. ESL teachers must often be skilled in teaching classes composed of students from several different language backgrounds. They have training in principles of language acquisition and in language teaching methods, but are not fluent in the home language of their students. Bilingual education teachers have similar academic training, and in addition are proficient in both English and the students' language. Teachers in bilingual, sheltered English, and structured immersion programs have received training in integrating language development with content area instruction.

Because there is a shortage of bilingual teachers, they are concentrated in teaching students who speak no English, meaning that "few school systems are able to offer any native-language instruction to students who are even moderately competent in English" (McDonnell & Hill, 1993, p. 64).

Administrators often have to balance the needs of LEP students for language development programs against other equally compelling interests. For example, bilingual education programs require that a certain number of students from a single language background are enrolled at a particular school. But this concentration of students may violate desegregation guidelines. "Before desegregation,...eight of San Jose [CA] Unified's 40 schools had bilingual programs. Now, those same resources serve 19 schools" (Guido, 1992).

The resources to design and implement language development programs for LEP students need to be supported by resources to monitor the progress of students and to coordinate these special programs with the regular school program (CCSSO, 1990). In addition, the quality of the programs themselves needs to be evaluated on an ongoing basis. "It appears that many more resources are being used to fund programs than to find out whether the programs are actually effective" (Rumberger, quoted in Chavez, 1991, p. 41).

Professional Development Challenges

Meeting *resource standards* is an essential first step in providing equal educational opportunity to students who do not speak, read, and write English proficiently. An equally important challenge is meeting *practice standards*--ensuring that qualified personnel actually implement a solid program. The challenge for teachers is to acquire the knowledge necessary to assist in the language development of LEP students, either as part of a program of study, or on the job.

Many schools are struggling to attract teachers qualified to teach in special language programs for LEP students. As a result, the overriding factor in determining the type and quality of programs offered to LEP students is teacher supply (McDonnell & Hill, 1993), and the supply of trained teachers falls far short

of the need. Despite offering higher salaries for teachers with bilingual certification, California alone could use between 12,000 and 20,000 more such teachers (National Forum, 1990). Half of the bilingual teachers employed by the San Jose (California) school district are not fully certified, and the district has not been able to spend all the money in its budget for bilingual aides because it cannot find enough people who read and write two languages (Guido, 1992). A third of the ESL teachers and half of the bilingual teachers in New York state are uncertified (McDonnell & Hill, 1993). The reality of inadequate teacher supply makes discussions of ideal programs moot:

> Scholarly and political debates over how long language-minority children should remain in bilingual classrooms or what instructional strategies should be used there are no more than hypothetical exercises as long as bilingual-teacher shortages remain so acute. (McDonnell & Hill, 1993, p. 103)

While Hispanic students constitute two-thirds of those with limited English proficiency, only 15% of bilingual teachers are Hispanic (Nieto, 1992). California alone has a shortage of 8,000 teachers bilingual in English and Spanish (BW Associates, 1992); only half of the state's 600,000 Spanish-speaking students are taught by a Spanish-speaking teacher. But speakers of other, less common languages are even less likely to obtain any native language services at all (McDonnell & Hill, 1993).

Because the majority of LEP students are unlikely to receive most of their instruction in their native language or from trained bilingual or ESL teachers, the quality of the language and literacy education they receive depends on mainstream classroom teachers. Because of this reality, both supporters (e.g., Olsen et al., 1994) and opponents (e.g., Little Hoover Commission, 1993) of bilingual education in California recommend that *all* teachers become knowledgeable about the processes of second language acquisition.

Such training would have benefits beyond the classroom in making teachers more sensitive to the issues of language and culture. A simple but telling example of how good intentions can be undermined by such a lack of awareness is illustrated by the enthusiastic parent involvement committee at one school studied by Olsen et

al. (1994). As the committee described their creative plans for outreach, the research team asked how they planned to overcome the language barrier with approximately 50 percent language minority parents. After a long pause, one teacher responded, "Our silence speaks for itself, doesn't it? The truth is, we never even thought about that until just now. It just never occurred to us" (p. 212).

If mainstream teachers are to be effective in educating LEP and other language minority students, they will need to gain an understanding of the emotional aspects of language learning, the cognitive processes involved in learning a second language, the role of native language instruction in learning, the concept of language development, and the social and political aspects of language acquisition.

Emotional Aspects of Language Learning

Learning a second language is qualitatively different from learning other academic subjects. "Second language learning in some respects involves the acquisition of a second identity" (Brown, 1992), and may therefore be heavily influenced by emotions and attitudes.

Language learning is not just a matter of acquiring linguistic skills; it can involve a re-construction of one's personal and cultural identity. Lambert's (1967) classic studies of English-speaking Canadians in an intensive French course demonstrated that increasing mastery of a second language can threaten one's sense of identity, leading to emotional turmoil.

A review of the influence of language and culture on writing (Farr, 1986) notes that for many ethnic minority students, learning to write in standard English entails changes in their relationship to their family and community. Farr comments that writing instruction is a social and political as well as educational issue; "it is important...to acknowledge the potential linguistic and social ramifications of effective writing instruction" (p. 214). For language minority children, learning English is more than an educational hurdle; it is a linguistic representation of cultural choices and allegiances, challenges and opportunities.

Second Language Learning as a Cognitive Task

Contrary to popular belief, research (summarized in McLaughlin, 1992) indicates that young children do not learn a second language effortlessly, that they do not learn faster with more exposure to the new language, that their oral fluency outstrips their academic competence, and that they require many years to reach grade-level academic ability in the new language. The formidable cognitive task of learning a second language is illustrated by the following research findings (drawn from McLaughlin, 1992, 1994):

- Young children are less efficient language learners than adolescents or adults; the only aspect in which they have an advantage is in native-like pronunciation.

- Reading and writing require complex cognitive academic language skills, different from conversational skills.

- Conversational competence can be acquired relatively quickly, but academic language skills take many years to develop.

- By the late elementary grades, students progress from "learning to read" to "reading to learn." The latter requires that students have mastered sound-symbol correspondences and have developed automatic decoding processes in order to extract meaning quickly from the text.

- Students reading in their second language may not yet have mastered these skills in the second language. Teachers may assume that children who cannot pronounce English correctly need remedial instruction in the mechanics of reading. But these children may already possess higher level reading skills in their native language, and be capable of reading for meaning in English if given specific guidance.

- Such students may be on target in their developmental ability to read, but may perform poorly in reading their second language

because they lack semantic, syntactic, and cultural knowledge. Intensive instruction in these areas may be more beneficial than instruction in the mechanics of reading.

- Good readers use metacognitive strategies to approach a text, such as generating questions, summarizing, predicting, and clarifying. Explicit instruction in these skills may assist students learning to read in a second language.

- Writing in a second language is difficult for students who have already learned to write in their native language because cultures vary in the way writing is taught, in what constitutes good writing styles and good models for stories, and in what kind of shared information between writer and reader is assumed.

- Although interference from the native language and culture may be a factor in second language writing, research suggests that "bilingual children follow a similar pattern of development in writing as is shown by native speakers, though their linguistic limitations cause them to develop various strategies to convey meaning." (McLaughlin, 1994, p. 190)

Native Language Instruction and Language Development

One of the "myths" of second language learning is that exposing students to a second language as early as possible and for as long as possible enhances their learning of the second language (McLaughlin, 1992). Instead, research demonstrates the positive effects of native language instruction on English competence and on achievement in other subjects (Hakuta, 1990).

Early support for this contention came from research on young adolescent immigrants. Studies of Finnish immigrants to Sweden (Skutnabb-Kangas and Toukomaa, 1976) and Mexican immigrants to the U.S. (Gonzalez, 1986, cited in Saville-Troike, 1991) found that adolescents with several years of schooling in their native country did better in the new language and school system than younger

children, overturning the prevailing notion that "the younger that children begin school in the new country the better they would do academically and in learning the second language" (Saville-Troike, 1991).

Subsequent analyses of the sparse longitudinal research on bilingual learners in the U.S. have concluded that the more academic support students receive in their native language (in addition to high quality instruction in English), the higher their overall achievement as measured in English (Collier, 1992):

- In evaluating program models, it is important to measure language learning over the long term; short-term gains by students in ESL programs may not be sustained in later years (Collier, 1989a).

- Early-exit bilingual programs may offer no advantage over structured immersion programs, but late-exit bilingual programs may offer students the best chance of catching up with their native English-speaking peers (Ramirez, Yuen, & Ramey, 1991).

- Helping students develop their first language skills aids them in achieving competence in a second language (Hakuta, 1990).

- Continuing students' native language development through age 12 facilitates their acquisition of a second language, no matter when that language is introduced; discontinuing native language development before age 12 impedes competence in the second language (Collier, 1989a).

- Different approaches are required for students of different ages with different amounts of prior schooling in their native language; immigrant students under age 12 who have had at least two years of education in their native country reach average achievement levels in 5-7 years, but young children with no native language schooling and students older than 12 facing academically challenging subject matter in a second language may take as long as 10 years to catch up (Collier, 1989a).

Instruction in their home language has several benefits for students: It prevents them from falling behind their peers in learning history, math, science, and other subjects in the regular curriculum. It enables them to develop their native language competence so they can continue to communicate with their parents and so they can build a foundation for adult fluency in two languages. And significantly, it does not retard their acquisition of English (Ramirez et al., 1991).

Students can succeed academically without native language instruction in school. For example, Caplan et al. (1991) report that the children of the "Boat People" (refugees who escaped by boat from Vietnam) have attained remarkable success attending poor urban schools unlikely to offer good bilingual programs. But the children's average achievement level is high only because of their superior scores in math. Their scores on English language and reading tests are below average, and the students themselves cite language problems as a significant obstacle.

Caplan and colleagues do not report test scores by age of student, so it is impossible to confirm the findings of Collier discussed above. The Boat Children were studied after they had been in the U.S. for an average of only 3 1/2 years, so their long-term achievement is unknown.

One of the most significant findings of the study is that children whose parents read to them--in Vietnamese or English--do better, indicating that academic-type support in the native language, whether at school or at home, may be a positive contributor to academic success. This hypothesis is supported by a study of family factors fostering high achievement among gifted Puerto Rican children in the U.S. (Hine, 1993). Positive family factors included a "press for language development"--parents read to children, encouraged discussion, showed concern about correct usage of Spanish and English, and "encouraged their children to maintain Spanish proficiency while learning English" (p. 168).

The Social and Political Context of Language Acquisition

Language learning goes beyond cognitive skill acquisition; it is also influenced by cultural and social psychological forces (Snow, 1992):

> When psychologists and linguists think about language acquisition, they emphasize cognition--the problems faced by the learner acquiring a complex system that has more or less overlap with complex systems already acquired. Anthropologists, social psychologists, and sociolinguists, on the other hand, think about the societal context of bilingualism....Sociocultural approaches are particularly helpful in understanding the social and cultural pressures affecting learners in situations where different social value is attached to their two languages. (pp. 17 & 18)

The context of education for non-native speakers of English in the United States has traditionally focused on their educational or cultural "deficits." Although the bilingual education models currently in use developed out of programs for Cuban refugees in Florida in the 1960s (Bartolome, 1994), the involvement of the government shifted the focus

> from an enrichment model aimed at developing fluency in two languages to a remedial effort designed to help "disadvantaged" children overcome the "handicap" of not speaking English. (Crawford, 1989, p. 29)

Moll (1986) charges that this deficit orientation leads to an "obsession with speaking English," and results in

> overwhelming pressure to make students fluent in English at all costs. Learning English, not learning, has become the controlling goal of instruction for these students, even if it places the children at risk academically.

The perception is that bilingual education fosters bilingualism even though "studies have shown that English is the medium of instruction from 72 to 92 percent of the time in transitional bilingual education programs" (Crawford, 1989, p. 175). Americans have deep societal concerns about bilingualism today, the same kinds of concerns that were voiced early in this century when German-speaking immigrants sought to educate their children in German (McLaughlin, 1985).

The push to replace students' native language with English, instead of adding English to their linguistic repertoire (Cziko, 1992), reflects the subordinate position of non-English languages, and the native speakers of these languages, in American society. Two examples cited by Olsen et al. (1994), in their study of California schools in the process of restructuring, illustrate how political realities are reflected in educational practices:

- At one school, efforts to grant college preparatory credit for a course in Spanish literature were denied on the grounds that many of the students were native Spanish speakers. But the school as a matter of course offered credit to native English speakers for taking courses in English literature.

- Although the California State Foreign Language Framework promotes "bilingualism as a desired outcome for all students graduating from California public schools beginning in 1992" (p. 207), this framework is ignored by restructuring schools that are using other curriculum frameworks as guidelines for reform.

- Only four of the 73 California schools studied by Olsen et al. (1994) promoted bilingualism actively; all four were elementary schools.

Language Acquisition Research and Education Reform

Unfortunately, research on language acquisition and bilingualism have had little impact on education reform proposals. Olsen et al. (1994) conclude that the

policy debates and professional dialogues of bilingual education and school restructuring occur separately:

> In very few schools [in their study] was the research about second language acquisition, effective programs for language minority students or bilingual education, or the needs of immigrant students, present among the theoretical and practical models adopted through restructuring....The bilingual education field remains largely marginalized from the school restructuring field....Both movements suffer from the lack of connection. And, as a result, in the majority of schools in this research, restructuring reforms were bypassing the needs of immigrant and language minority students, and even in some cases eroding programs which had been designed to meet their unique needs. (pp. 217-218)

It is ironic, says Gandara (1994), that while many reform proposals have emphasized the educational and economic benefits of having citizens who are proficient in a second language, LEP students are not encouraged to maintain their native language. The "double standard about bilingualism" (Olsen et al., 1994, p. 216) is illustrated by the lack of awards or special recognition for language minority students who develop fluency in English and their native language, in contrast to Advanced Placement foreign language courses and exams for native English speakers attempting to master a second language.

The challenge for educators and researchers alike will be to create a dialogue between those seeking to reform the teaching-learning process and those with expertise in the process of second language acquisition. Together they can develop models of teaching and learning that incorporate language acquisition research. But acceptance of these models depends on social, rather than educational, forces.

Language Education Goals

Language education for language minority students will continue to be contentious because it is not just an educational issue. As a symbol of primary

group identity, as an indicator of social and political status, language has an emotional power far beyond other academic subjects.

The overriding feature of discussions about the education of language minority students in the U.S. has been the single-minded focus on language. Grosjean (1982) comments that this is not such an issue in other countries, where bilingualism and bidialectalism are widespread. Only in societies where bilingualism is rare or where there is an open policy of assimilation toward minorities is bilingualism seen as a problem; other societies view it as commonplace.

The lack of coherence in language and literacy programs for LEP students in the U.S. reflects the societal struggle between forces favoring assimilation and those supporting cultural and linguistic diversity. While some sectors of the society contend that "the primary goal of education for immigrant students [is] helping the children to become fluent in English quickly" (Little Hoover Commission, 1993, p. v), others insist that the goal should include language *and* academic development, and that bilingualism should be fostered (August & Hakuta, 1993).

Effective Language Development Programs for LEP Students

Armed with research evidence that native language instruction aids English achievement and progress in other subjects, supporters call for increased federal government support for bilingual education (McDonnell & Hill, 1993; August & Hakuta, 1993). Although some schools may have students from many language backgrounds, about three-fourths of LEP students are in situations where bilingual education is feasible (La Fontaine, 1988, cited in CCSSO, 1990). And because most LEP students have Spanish as a native language, providing high quality Spanish-English bilingual education to all students who could benefit from it would have a major impact on LEP student achievement in the U.S.

An analysis of instructional practices in language and literacy for Latino students (Garcia, 1991, p. 4) found that effective teachers had a tolerant attitude toward language usage. While teachers in the lower elementary grades used mostly Spanish, and those in the upper grades used mostly English, students were allowed

to use either language, a policy that seemed to aid their natural language development:

- Students progressed systematically from writing in Spanish in the early grades to writing in English in the later grades.

- Students' writing in English emerged at or above their grade level of writing in Spanish.

- Students' writing in English was highly conventional, contained few spelling or grammatical errors, and showed systematic use of invented spelling.

- Students made the transition from Spanish to English themselves, without any pressure from the teacher to do so.

A report to guide policy makers on federal legislation affecting language minority students (August & Hakuta, 1993, p. 1) is based on two principles:

- Language-minority students must be provided with an equal opportunity to learn the same challenging content and high-level skills that school reform movements advocate for all students.

- Proficiency in two or more languages should be promoted for all American students. Bilingualism enhances cognitive and social growth, competitiveness in a global marketplace, national security, and understanding of diverse peoples and cultures.

One model that attempts to encompass these dual goals is two-way bilingual education. Native English-speaking students and students with another native language attend the same classes, in which instruction is sometimes conducted in one language and sometimes in another. The goal is for all students to become bilingual while also mastering the regular school curriculum. Currently there are at

least 177 such programs in 99 school districts in the U.S., all but a handful at the elementary school level (Christian & Montone, 1994).

Research on one such program, the Spanish-English Amigos two-way bilingual program in Cambridge, Massachusetts, (Cabazon, Lambert, & Hall, 1993) concluded that the achievement of Amigos students was comparable to control students, matched for intellectual ability and socioeconomic status, who were in transitional bilingual education programs or in a standard all-English program. The two-way bilingual program did not disadvantage the Amigos students academically, either in their native and second language or in other academic subjects.

In addition, there is some evidence that two-way bilingual programs confer important non-academic benefits. The students and parents in the Amigos program felt more positively about the other ethnic group, about bilingualism and multiculturalism, and about their own academic ability and self-worth than students in programs where students were segregated by language group.

Interviews with 20 (non-randomly selected) adults who attended two-way bilingual programs in Washington, D.C. in the early 1970s (Collier, 1989b) found that, although their academic bilingual experience lasted for only 4-6 years in elementary school, it had a profound effect on their lives. All but one adult were attending college, many continued to study Spanish or other languages after elementary school, all had traveled or lived in other countries, all had done paid or volunteer work requiring the use of their two languages, all felt fully proficient in English and orally fluent in Spanish, all the Hispanics and half the Anglos rated themselves proficient in written Spanish as well, all interacted extensively with speakers of both languages in professional and personal settings, and all expressed positive and warm feelings toward their bilingual schooling.

While the results of two-way bilingual education may not be as uniformly glowing as this small study indicates, it does offer a model that combines the interests of language minority and language majority students, treats languages as a resource to be nurtured rather than an obstacle to be overcome, integrates language development into the entire academic curriculum, and promotes the kind of positive cross-cultural interaction that is appropriate for a diverse society.

Implications

Designing and implementing language development programs for LEP students involves a delicate balancing act. Administrators and teachers must weigh complex and often competing interests: the necessity for learning English, the (controversial) desirability of native language support and maintenance, the need for more bilingual and ESL teachers, the desirability of all teachers learning more about the processes and issues involved in second language learning, and the need to adapt programs to meet the needs of particular students and the local context. Examinations of exemplary programs should involve discussions of the following questions:

- What are the school's language education goals for its LEP students?
- How do they compare to the language development goals and standards for native English-speaking students?
- Are the goals for LEP students appropriate for the local educational and community context?
- How are schools able to staff an exemplary language and literacy program for LEP students?
- What role do the native languages of LEP students play in language development programs, the general educational program, and the life of the school?
- In what specific ways are LEP students guided in developing language and literacy skills?
- As students enter the late elementary grades, what is the articulation among the language development program offered them, the programs they have come from, and those they are likely to enter after elementary school?

CHAPTER 7

MATHEMATICS AND SCIENCE: INTERMEDIATE SCHOOL LEVEL

Until recently, concern about the education of students from non-English language backgrounds has focused on their English language development. But partly because LEP students are now entering the U.S. educational system for the first time at the secondary level, there is a growing recognition that these students' needs go beyond acquiring English. The success of LEP students is hampered not only by their limited command of English, but also by the challenge of simultaneously learning complex academic material.

The difficulties that LEP students face in completing mathematics and science courses restrict their opportunities on a personal level; they may be unable to graduate from high school or continue their education. On a societal level, the wide disparities in math and science achievement that exist among ethnic groups jeopardize the development of a scientifically literate populace and threaten the technological productivity of the U.S. economy.

The concern about the math and science achievement of students from ethnic minority groups has intensified because children from these groups will constitute a larger and larger proportion of students in the future. At the same time, employment opportunities in scientific and many other occupations are predicted to require increasing technical competence. Because the traditional pool that supplies scientific workers--White male students--is shrinking, policy makers and educators are focusing on ways to increase the participation of women and minority persons in scientific careers.

The material in this chapter is presented with several caveats. First, as noted by Secada (1992), in his review of race, ethnicity, social class, language, and achievement in mathematics, LEP students are often not tested, or their scores are not included in national ethnic group statistics. Thus it is difficult to ascertain directly the achievement level of LEP students in mathematics and science. Implications about their achievement must be drawn from studies of ethnic minority

groups and from pilot programs developed specifically for students from non-English language backgrounds.

As noted by Oakes (1990) in her comprehensive review of research on women and minority students in science and mathematics, the bulk of studies have concentrated on girls/women and math. Fewer studies have investigated females and science, and fewer still have focused on minority groups and math or science. In most cases, the minority group studied was African Americans. Little is known about the participation in math and science of Hispanics, the group most likely to include LEP students. As suggested by the differential levels of achievement among ethnic groups, it may not be valid to apply lessons learned from research on African American students to Hispanics or students from various other language backgrounds.

Second, while the math and science achievement of Whites surpasses that of African Americans, Native Americans, and Hispanics, Asian Americans are on a par with, or even often exceed, the performance of Whites. This suggests that language factors alone cannot explain the disparities, and forces us to consider other important influences on achievement, such as social class, immigrant status, and culture.

Intermediate School Level

Many of the issues discussed in the previous chapter become more complex at the intermediate school level. It is possible for an LEP student in elementary school to receive a high quality education for an entire year by relying on a single person--the classroom teacher. If that teacher has bilingual credentials and follows a rigorous curriculum in English and other academic subjects, her LEP students can achieve as much as any other students, and in addition are able to develop their native language skills. But it is much more difficult for an LEP student in intermediate school to have the same fortunate outcome. He or she may have as many as 10 different teachers in one year, representing several different departments. Providing this student with a coherent and appropriate program of study requires coordination among all these teachers and flexibility within the usual departmental structure of intermediate level schools.

This chapter will review the challenges that intermediate schools face in providing mathematics and science education to LEP and other language minority students. If these students are to have an equal opportunity to learn complex material in these subject areas, programs will need to redress disparities in access to science and math courses; dismantle the tracking system; respond to students' need for English language development; make the regular math and science curriculum fully available to LEP students; devise more useful assessment methods; organize time differently; take account of the developmental and social issues of adolescence; promote the integration of research on mathematics, science, and language; counteract the poor performance of all U.S. students in math and science; and adapt curriculum reform tenets to LEP students.

Disparities in Access

Differences among ethnic groups with respect to mathematics and science are evident along several dimensions--opportunity, achievement, course taking, and career choice (Oakes, 1990; Secada, 1992). These dimensions are interrelated steps along the "scientific pipeline," the educational path taken by students who ultimately pursue careers in scientific fields (Berryman, 1983). The critical period for entering the pool of future scientific workers is before high school; during high school and college few students enter the scientific pipeline and many leave it for other fields of study. While females tend to remain in the pool until the later high school grades or the early years of college, African American and Hispanic students leave the pipeline early in elementary school.

Many of the factors that result in unequal opportunity for students from ethnic minority groups (including many LEP students) to enter and stay in the scientific pipeline are enumerated in Oakes's (1990) review: inadequate funding of inner city schools; the tendency of such schools to attract the least qualified teachers; teacher expectations, teaching strategies, and classroom activities; inequities among schools in math and science resources such as computers and laboratory equipment; disparities in access to math and science experiences outside of school such as museums and extracurricular classes; disparities in guidance and encouragement from knowledgeable adults such as parents, counselors, and teachers; the

availability of role models from the student's ethnic or language group; parental educational resources, expectations, and involvement; and discrimination against members of ethnic minority groups seeking access to educational or occupational opportunities.

Curricular factors that directly impact students' progress along the scientific pipeline include tracking, course offerings, and course taking. Course taking varies dramatically by ethnicity. While about half of White students and two-thirds of Asian students take algebra 2, fewer than one-third of African American and Hispanic students do so; the figures are roughly the same for chemistry (Kolstad & Thorne, 1989, cited in Blank & Engler, 1992). Oakes (1990) concludes that, while "for girls, lower rates of course taking appear to be by choice, for minorities, course-taking differences result primarily from tracking practices and course offerings" (p. 187).

Tracking

Oakes (1990) indicts tracking as the primary cause of disparities among ethnic groups in mathematics and science achievement. Disproportionate numbers of minority students are tracked into "slow" groups in elementary school, in which the content and pace of instruction do not match that of the "fast" groups. Thus many minority students enter secondary school with less mathematical knowledge and skills, where they are once again tracked into low-ability classes or non-college-preparatory groups.

Programs for LEP students are also often guided by a less rigorous curriculum. Students who are not fluent in English may be barred from regular classes or tracked into "remedial" or "compensatory" classes where instruction proceeds at a slower pace.

The assumption underlying tracking is that students learn best in groups that are homogeneous in ability, and that this method of dividing students into classes allows for enriched instruction for advanced students and intensive "catch-up" activities for slower learners. The reality is that the instruction provided to students in the "slow" classes is often boring and repetitive, and does not prepare them to

progress faster. Students may be consigned to a low-ability track for their entire schooling on the basis of a single test score, receiving an inferior education instead of extra help.

Oakes (1985) traces the entrenched practice of tracking to the beginning of the century, when schools faced the challenge of educating massive numbers of immigrant children. The prevailing belief that racial and ethnic groups differed in their innate capacity for intellectual achievement resulted in a stratified system that offered "appropriate" education for groups of varying ability. Although such racist assumptions have eroded, students from non-English language backgrounds and from racial and ethnic minority groups are still more likely to be assigned to low-ability and special education classes and less likely to be placed in classes for gifted children (McCarty First & Willshire Carrera, 1988).

Differences among schools also constitute a kind of tracking on a larger scale. Zucker (1990) notes that schools serving disadvantaged students (schools also attended by the majority of LEP students) provide low quality mathematics curriculum and instruction. Such schools "emphasize more computation and less instruction focusing on applications and concepts," "have less capable teachers and inadequate resources for mathematics education," and "have low expectations of disadvantaged students' ability to learn mathematics" (p. VIII-9).

English Language Development

Programs for LEP students have been designed with the implicit assumption that such students would enter American schools in kindergarten, participate in several years of bilingual education or ESL classes, be transitioned into English-medium classes by the end of elementary school, and enter secondary school fluent enough in English not to require additional assistance (Lucas, 1993a). But the reality is that many language minority students enter school later than kindergarten, and may not have sufficient instruction to become competent in academic English by the time they enter secondary school. Students who immigrate to the U.S. in their teenage years, and have a weak foundation in English or other subjects, may not have enough years left to master both English and the academic material required for graduation or college entrance (Collier, 1992).

Nearly one-third of LEP students in California in 1991 were of secondary school age (California State Department of Education, 1991, cited in Lucas, 1993a). Not only must secondary schools begin to deal with significant numbers of LEP students, but they must acknowledge that this group is even more diverse in academic background, native and English language facility, and familiarity with American culture than their elementary school age counterparts.

As noted above, the intermediate school years are critical in determining students' eligibility for postsecondary education. It is at this stage that they encounter two "gatekeepers"--advanced English literacy and college prep math and science courses. LEP students who enter secondary school with weak skills in academic English or a shaky foundation in math and science are presented with a formidable challenge. For some of these students, their insufficient language development was masked in elementary school because tasks were cognitively undemanding and/or embedded in a concrete context. Or, like some "successful" Asian immigrant students who appear to have native-level competence in English, they have not been required to do the kind of writing that would reveal the gaps in their English literacy skills (Peitzman, 1992). "When schoolwork becomes demanding and based on independent textbook reading, generally about middle school," high numbers of LEP students begin to drop out of school (Walker de Felix, Waxman, & Paige, 1993). If students are not asked to do much writing until the later years of secondary school, the crunch may be postponed until college (Peitzman, 1992).

Availability of Math and Science Curricula

The second "gatekeeper" to higher education is college prep math and science courses. Whether because of tracking or for other reasons, students from non-English language backgrounds (with the exception of Asian language background students) take fewer advanced courses in math and science (*Numbers and Needs*, December, 1991).

Few schools offer the full range of academic courses to students who are not proficient in English. A study of 27 California secondary schools found that only

six gave LEP students access to the full core math, science, and social studies curriculum; half of the schools offered few or no content area classes at all to these students (Minicucci & Olsen, 1992).

Curricular opportunities available to LEP students can vary dramatically from school to school. At one high school in Houston studied by McDonnell & Hill (1993), although one-third of the students were LEP, no bilingual classes were offered, and the only ESL classes were in language arts. A high school in Los Angeles, with two-thirds LEP students speaking ten different languages, offered one college prep course--biology--in Spanish. The other bilingual courses were in remedial and introductory math. In contrast, a Chicago high school, with 80 percent LEP students, offered a full college prep curriculum in Spanish and Polish. But for the 40 percent of LEP students with other native languages, an ESL program was their only option.

Opportunities can also vary within schools. Minicucci & Olsen (1992) found schools that offered LEP students a good program in math, but not in science, for example. The departmental structure of intermediate schools makes it difficult for teachers to collaborate across departments and coordinate their efforts in a flexible enough manner to meet the needs of LEP students.

For most secondary school LEP students, the only way to gain access to the full range of core curriculum is to demonstrate proficiency in English. Lacking that, LEP students at the secondary level may take only ESL courses plus electives, non-college prep courses, or watered-down content courses. Some students who might be able to succeed in regular courses are prevented from enrolling in them because the school requires a certain level of English fluency; such students may make diligent efforts to escape from the "ESL ghetto," feeling that these special efforts to help them are actually stigmatizing them and impeding their academic progress.

Assessment

Saville-Troike (1991) notes that the narrow focus on acquiring English fluency has blinded educators to more meaningful assessments of learning. Instead of asking how proficient a student's English is, she questions whether we shouldn't

be asking instead, "What is really important to assess in regard to an LEP student's chances for succeeding in a regular English-medium classroom?" (p. 9). She advocates measuring achievement more directly, by testing content learning in the student's strongest language and by assessing predictors of academic success such as vocabulary development, rather than using English proficiency as a global proxy for achievement.

The study of California secondary schools (Minicucci & Olsen, 1992) found that, while all the schools assessed LEP students for oral English fluency and English achievement, and some assessed primary language literacy and academic skills, very few assessed previous schooling, and usually only via a parental interview.

Time Flexibility

Even if LEP students manage to gain entrance into college prep math courses, they may run out of time to complete the entire course of study in math and science. McDonnell and Hill's (1993) examination of transcripts of a cohort of Los Angeles students found that immigrant students who first enter U.S. schools at the high school level start taking math courses later than their American-born classmates or immigrants who came at a younger age. They often engage in heroic efforts to catch up; by the end of 11th grade, new immigrants are more likely than the other groups to have taken first-year algebra. But

> the standard college-preparatory sequence includes two years of algebra and one of geometry. Without taking summer school or delaying graduation by a year, the nearly 40 percent of new immigrants who start Algebra 1 in the eleventh grade would not be able to finish the entire sequence of courses. (p. 72)

Developmental and Social Factors

While the academic problems of secondary school LEP students are daunting enough, they are compounded by the social challenges of adolescence, and

exacerbated by the forces of ethnic and sexual identity and peer relations that are so keenly felt by all students of this age group. Language minority students may experience the following:

- conflict between home and school worlds, stress from family pressures to achieve in school, or to earn money instead of doing schoolwork (Phelan, Cao, & Davidson, 1992)

- segregation from, or overt hostility from, fellow students from other ethnic groups; discrimination by other students or school personnel against immigrants (Olsen, 1988)

- peer pressure to adopt an ethnic self-identity at odds with academic achievement (Ogbu, 1986, 1992)

Research on Mathematics, Science, and Language

Some researchers have sought to trace connections between native language and achievement in math and science. It is hypothesized, for example, that regularities in number words in Asian languages give speakers of those languages an advantage in learning to count, while speakers of Black English Vernacular (BEV) may be confused by prepositional constructions commonly used in Standard English word problems because these constructions do not appear in BEV (Stigler & Baranes, 1988-89).

Most research on teaching math and science to LEP students has focused on discussions of what language to use for instruction. A review of teaching bilingual learners (Wong Fillmore and Valadez, 1986) cites some researchers who advocate teaching mathematics in the student's stronger language, and others who advise teaching mathematics to LEP students directly in English.

Wong Fillmore and Valadez also report controversy among researchers regarding science instruction. Some argue that science can be taught to LEP students in English because science lends itself more to group activity and using language in context than does mathematics, while others claim that students perform

better if science is taught at least partly in their native language. Some researchers stress the importance of teaching science concepts in the students' strongest language, while others report mixed results on students' transfer of math and science concepts across languages.

Beyond the issue of language of instruction, there has been little attempt to integrate research on language and culture with that on mathematics and science education in general. In a review of race, ethnicity, social class, language, and achievement in mathematics, Secada (1992) commented that the work he reviewed had a "marginal status relative to mainstream mathematics education research. With few exceptions, work in this area was not found in mathematics education research journals, nor was it the product of mathematics educators." Secada concludes that "if the intellectual agendas of mainstream mathematics education do not (or cannot) include issues of student diversity, then the fundamental utility of mainstream efforts must be seen as suspect" (p. 654). As in the case of language acquisition research, noted in the previous chapter, the challenge will be to bridge the research and practice gap between language/culture studies and "mainstream/reformed" mathematics/science to create a vision of teaching and learning these disciplines that incorporates issues of diversity.

U.S. Students in International Comparison

It is not only LEP and other minority students whose scientific and mathematical literacy is in jeopardy. American students score near the bottom in math and science achievement compared to other industrialized countries, and their performance has slipped relative to American students educated in the Sputnik era (NASBE, 1991). Although there has been some improvement in proficiency during the past decade, in 1990 less than 20 percent of 4th, 8th, and 12th graders demonstrated competency in math for their grade level (Blank & Engler, 1992). McKnight (1990) concludes that, "in U.S. mathematics education, for the mainstream as well as the disadvantaged, things are broken"; "the brightest and most expert of U.S. mathematics students manage to achieve mediocrity at best when compared to students from other countries" (pp. VII-3, VII-4).

If the situation is bad for American students in general, it is worse for poor and minority students. As Zucker (1990) notes:

> Many of the worst features of American mathematics education (e.g., an overemphasis on arithmetic computation through grade 8) are intensified for disadvantaged students. In effect disadvantaged students show the most severe ill effects of a system of mathematics education that is badly flawed for all students. (p. VIII-4)

Critics of U.S. mathematics education (e.g., McKnight et al., 1987) indict the system for the amount of math that is taught to students, the way in which it is taught, and the way students are organized into classes that receive different treatment.

A study of K-8 mathematics textbooks (Flanders, 1987, cited in Zucker, 1990, p. VIII-6) found that much of the "new" material is actually a review of the previous year's material:

> A relatively steady decrease occurs in the amount of new content over the years up through eighth grade, where less than one-third of the material is new to students. This decrease is followed by an astounding rise in the amount of new content in the texts of the most common ninth-grade course, algebra.

McKnight et al. (1987) report that four different class types--each with a different curriculum--are found in 8th grade mathematics in the U.S. In the lowest track, only one-third of the algebra on the international test was taught; students in the highest track were instructed in almost all of the algebra on the test.

American schools have more extensive tracking than countries whose students achieve higher math scores. In an international comparison (McKnight et al., 1987), nearly half of the variance in math achievement scores of American students was accounted for by differences between classes, while in France and

Canada, only one-eighth of the variation was due to class differences. In Japan, differences among classes accounted for almost none of the variation in students' scores.

Math and Science Curriculum Reform

The research reviewed in this chapter implies that the opportunities for language minority students to learn math and science are constrained for a number of reasons. But simply removing those constraints and providing them with the best traditional math and science instruction is not the answer. Walter Secada warns us to beware of the "moving target"; we should not make inordinate efforts to improve instruction for disadvantaged students in the traditional fashion while the current thinking about math and science education has moved on in an entirely new direction. To ensure that language minority students have an equal opportunity to learn, they must also be allowed to participate in curricular reform efforts.

The reform of science and mathematics education is based on the following tenets, according to a review by Anderson et al. (1994). Each has implications for language minority students.

1) **A constructivist approach to knowledge.**

The traditional view that mathematics and science are bodies of knowledge to be transmitted from the teacher/expert to the student/novice is being challenged by social constructivist conceptions that emphasize the construction of knowledge through a process of collaborative interaction with other learners. Pedagogical approaches that follow the social constructivist perspective purport to be modeled after the actual working environments and thinking processes of professional scientists and mathematicians.

Teaching with a constructivist understanding of learning requires that teachers gain an intimate knowledge of their students' preconceptions and create contextually meaningful learning opportunities. It requires students to view themselves as active creators of knowledge rather than passive recipients, an unaccustomed role for many language minority students.

2) **An emphasis on higher order thinking**.

Instead of adhering to a hierarchical conception of thinking, stretching from basic skills to abstract reasoning, teachers should foster higher order thinking in all students at all stages of intellectual development. Higher order thinking cannot be developed in isolation; opportunities to think deeply about important content must be provided. The implication for math and science curricula is that coverage of a broad range of information is less important than depth; remembering is less important than understanding.

Fostering higher order thinking requires teachers and students to willingly embark on an unknown journey, in which the answers are not found at the end of the textbook. They must argue and negotiate with their fellow travelers about the meaning of what they discover. The emphasis on communication and dialogue in the pursuit of understanding is particularly challenging for teachers and students who do not share a common language.

3) **New curricular emphases.**

"Curricula should be focused on complex, meaningful problems; tasks should be global enough that their purposes are apparent to students; and the instruction of basic skills should be embedded in more global tasks. A global task provides students with motivation, students have the opportunity to practice skills as part of a coherent performance, and the likelihood of transfer of the skills to real-world situations is increased. The tasks selected should make connections with students' out-of-school experiences and culture" (Anderson et al., 1994).

A vision for mathematics education developed by the National Council of Teachers of Mathematics articulates the following goals for students--learning to value mathematics, becoming confident in their ability to do mathematics, becoming mathematical problem solvers, learning to communicate mathematically, and learning to reason mathematically.

The goal of science education in constructivist programs such as Project 2061, sponsored by the American Academy for the Advancement of Science, is for all students to become scientifically literate--

- being familiar with the natural world and recognizing both its diversity and its unity
- understanding key concepts and principles of science
- being aware of ways in which science, mathematics, and technology are interdependent
- knowing that science, mathematics, and technology are human enterprises and knowing what that implies about their strengths and limitations
- having a capacity for scientific ways of thinking
- using scientific knowledge and ways of thinking for individual and social purposes (Anderson et al., 1994, p. 67)

Curricular Reform and LEP Students

Although attempts have been made to reform mathematics and science education along these lines for the majority of students, and for disadvantaged students (Knapp & Shields, 1990; Means, Chelemer, & Knapp, 1991), only a few programs have considered the special needs of LEP students. One of the best known is Cheche Konnen, a science curriculum originally developed for Haitian Creole-speaking students that encourages the use of the native language and incorporates cultural interests while guiding students in scientific investigations (Rosebery, Warren, & Conant, 1992).

This curriculum embodies many of the principles and practices discussed above:

- Students plan and conduct investigations of natural phenomena that interest them; they form hypotheses, collect and analyze data, and draw conclusions.

- Students engage in higher order thinking even though most have never studied science before and some have had little schooling at all.

- They address real-world problems. In one study, students tested the water from various drinking fountains in the school.

- They engage in collaborative inquiry by working in groups.

- Culturally relevant materials are used. In one project, students made Haitian drums and used them to learn about the scientific principles of acoustics.

- The program is designed to allow students to "do" science, and to appropriate scientific ways of knowing and doing by engaging in scientific practice.

- Teachers as well as students are engaged in a learning process. Teachers participate in intensive training to teach these classes.

In addition, of crucial importance for LEP students, the program allows students to use their native language. Language development is facilitated by genuine communication about relevant topics. Language is learned in context as it is integrated with science activities. The goal of Cheche Konnen is not just to give language minority students the (English) vocabulary of science, but to help them learn to think and talk scientifically through authentic scientific activity.

Implications

Intermediate schools face multiple challenges in educating students who lack sufficient academic English competence to participate in regular science and mathematics courses. An examination of exemplary programs in these subject areas should include the following questions:

- In what way are (English) language skills and math/science knowledge assessed in order to place LEP students into appropriate classes?
- How is the math/science program for LEP students related to the regular program?
- How is the math/science program for LEP students related to their English language development program?
- How are math/science achievement standards set for LEP students?
- What features of math/science curriculum reform guide the program?
- How is the progress in math/science assessed?
- How is time allocated effectively to meet the needs of LEP students for (English) language development and math/science instruction?
- In what way does the organization of the school and of classes foster the success of LEP students?

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